



NIST  
PUBLICATIONS

**NISTIR 5260**

# **Energy Related Inventions Program**

## **Status Report for Recommendations 1 through 350**

A Joint Program of  
The Department of Energy  
and The National Institute  
of Standards and Technology

U.S. DEPARTMENT OF COMMERCE  
Technology Administration  
National Institute of Standards  
and Technology  
Office of Technology Evaluation and Assessment  
Energy Related Inventions Program  
Gaithersburg, MD 20899

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#5260  
1993

**NIST**



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June 1993



**U.S. DEPARTMENT OF COMMERCE**  
**Ronald H. Brown, Secretary**

**TECHNOLOGY ADMINISTRATION**  
**Mary L. Good, Under Secretary for Technology**

**NATIONAL INSTITUTE OF STANDARDS  
AND TECHNOLOGY**  
**Arati Prabhakar, Director**

## PREFACE

The Energy-Related Inventions Program was established in 1975. Since its inception over 30,000 inventions have been evaluated. As of the printing of this report 604 inventions have been recommended to the Department of Energy. The Department of Energy has funded 418 of these inventions for a total of \$31.7 million. This report supersedes NISTIR 4898 and summarizes the status of recommended inventions 1 through 350. A companion report (NISTIR 5259) summarizes recommended inventions 351 through 604.

## Section 1 Introduction

### 1.0 BACKGROUND

The Federal Nonnuclear Energy Research and Development Act of 1974 (Public Law 93-577) established a comprehensive national program, called the Energy-Related Inventions Program (ERIP), for research and development of all potentially useful energy sources and energy use technologies. The U.S. Department of Energy (DOE) conducts this program.

An important part of ERIP is to encourage innovation in the development of energy technology. To help DOE carry out this responsibility, the Act directs the National Institute of Standards and Technology (NIST) to evaluate all promising nonnuclear energy-related inventions. NIST is to give particular attention to those submitted by independent inventors and small companies. NIST has established the Office of Technology Evaluation and Assessment (OTEA) (formerly the Office of Energy Related Inventions (OERI)) to evaluate energy source and energy use technologies.

### 1.1 OVERVIEW OF PROGRAM OPERATION

OTEA reviews and processes all evaluation requests. Evaluation is based on three general criteria: technical feasibility, potential energy-conservation or energy-supply impact, and commercial feasibility. All inventors are informed of the results of the evaluation of their submitted inventions. An invention which meets the NIST criteria for recommendation is forwarded to DOE for possible support action.

Inventions forwarded by the OTEA to DOE are recommended as "technically valid and worthy of consideration for Government support" under the ERIP Program. OTEA furnishes a report with the recommendation to explain in detail the advantages of the technology, as well as any qualifications of the recommendations, such as required testing. OTEA also provides guidance to DOE and the inventor for deciding on the nature and extent of support to be given.

Inventions may be recommended by OTEA at any stage of their development, whether conceptual, at the laboratory testing stage, or even in production or the process of being marketed. The level of support to be furnished depends largely on the amount required to move invention development forward or to resolve the question of whether development should continue. The latter question is of particular interest if the NIST evaluation is based on data furnished by the inventor and the recommendation is qualified by an expressed need for data validation under controlled testing conditions.

DOE generally accepts the NIST recommendation and provides appropriate support. However, there have been and will continue to be cases in which DOE cannot or will not provide support. DOE attempts to reach agreement with the inventor on

the nature and extent of support within constraints. Constraints include the capabilities of the inventor and/or the company involved, possible duplication of prior or on-going DOE-funded efforts, availability of private sector support, and DOE funding limitations.

It should be noted that DOE performs no technical evaluation beyond that done by NIST. DOE does reserve the right to question and reject the NIST recommendation and to restrict support due to policy and/or funding considerations.

Each case is decided on the basis of its own merit and need. If DOE decides to support the invention, support can include: a grant, a contract, or direct assistance of a technical or business nature. DOE's objective is that, as a result of this support, the inventor should be in a position to do one or more of the following:

- Compete effectively in obtaining contracts from other sources (including existing government programs) to permit further development of the invention.
- Assemble, with confidence of success, the people and capital necessary to produce and market products derived from the invention through a business enterprise in which the inventor is a major participant.
- Negotiate arrangements with an existing company that will develop the inventor's product for commercialization.

## 1.2 EVALUATION PROCEDURES (NIST)

There are three principal steps in the evaluation process used by the NIST Office of Technology Evaluation and Assessment. In the first step, Disclosure Review and Analysis, invention disclosures are either accepted or rejected for evaluation, depending upon whether or not the invention is within program scope and is a sufficiently well-prepared disclosure to enable evaluation. If accepted, a formal evaluation is initiated.

The second step, First-Stage Evaluation, is a technical screening in which brief opinions are obtained from OTEA staff evaluators, other government scientists or engineers, or consultants or contractors. If the invention is rated as "promising" in this First-Stage, Second-Stage Evaluation is initiated. ("Promising" means the invention seems to be technically feasible, has significant energy conservation or supply potential, and is deemed to be economically and commercially practical.)

In Second-Stage Evaluation, an analysis is conducted in greater depth, resulting in a formal report. If Second-Stage Evaluation confirms the finding of "promising," the disclosure and evaluation results are forwarded to DOE with a recommendation for Government support.

Throughout the process, the inventor is kept informed of the status of the evaluation. The inventor is sent a letter notifying him of the results of First-

or Second-Stage evaluations as they are completed. If Second-Stage Evaluation has been conducted, a copy of the Second-Stage invention review is also sent to the inventor.

### 1.3 SUPPORT PROCEDURES (DOE)

Upon receipt of a recommendation from NIST, DOE contacts the inventor, provides details of the support procedures, and requests a statement as to the nature and extent of support desired, generally in the form of a proposal or grant application. The DOE invention coordinator works with the inventor in proposal preparation to ensure effective review of support options and to develop a satisfactory statement of work and support plan. DOE then decides whether or not to provide support as well as the nature and extent of support.

If financial support is to be provided, DOE initiates procurement action, monitors progress of the procurement action, and helps to expedite processing of the paperwork until the award is made. As of June, 1993 DOE has awarded a total of \$34.7 to 469 of the inventions recommended by NIST. During the period that financial or other support is provided, the DOE invention coordinator monitors and assists the inventor's efforts, maintaining a status report for use by both DOE and NIST.

### 1.4 SUPPLEMENTARY ACTIVITIES

#### 1.4.1 National Innovation Workshops (NIW)

This project was initiated in early 1980 as a means of informing inventors about the Program and increasing the percentage of higher-quality inventions submitted to OTEA. Another objective of the Workshop series is to assist inventors (thus to stimulate innovation in general) by putting them in touch with their community resources and by providing practical instruction in the various elements of the innovation process.

Workshops are conducted in a standard format as two-day seminars. On each day a plenary session and a luncheon session feature national-level speakers on invention and innovation. Three 1-1/2 hour periods each day then are designated for the conduct of 8 to 10 concurrent Workshop sessions.

The Workshops are organized as regional activities by a committee composed of representatives from such regional organizations as universities, venture or other financing groups, private sector institutions concerned with technological innovation, state and local government agencies, patent law associations, etc. Federal involvement is restricted to providing guidance and financial support. The federal role is catalytic in nature in that Workshop feasibility is demonstrated with an expectation that the regional committee will continue to hold Workshops and similar activities in the future without federal involvement.

Seventy-four NIWs have been held to through June, 1993. Three additional NIWs are scheduled for calendar year 1993. Attendance has averaged about 150 inventors and small businesses.

#### 1.4.2 Commercialization Planning Workshops (CPW)

This series of workshops, managed entirely by DOE, was initiated in June 1984 as a mechanism for providing direct and immediate assistance to inventors whose inventions have been recommended by NIST. Each workshop brings together a group of 10-14 such inventors for a three-day meeting with a "faculty" of six workshop leaders who are selected by DOE on the basis of their expertise in at least one aspect of innovation (business planning, marketing, finance, licensing, etc.). Workshop attendance is limited to inventors invited by DOE and the faculty.

The three-day meeting is devised to provide a concentrated educational/informative experience for each recommended inventor; travel and other meeting expenses are paid for by the Government. The objective in each case is for the recommended inventor to develop, with the aid of the faculty, a detailed plan for commercialization of his invention. The plan then serves as the principal basis for the DOE office to conduct its initial review of the recommendation (Analysis).

#### 1.5 NATURE OF THIS REPORT

This report comprises an introductory section (Section 1) and a report section (Section 2).

Section 2 is the main body of the report and contains a brief description of each invention, a summary of its status, the identity of the DOE staff coordinator for that invention, the date the invention was submitted to NIST and the date recommended to DOE. The name and address of the person to contact regarding the invention is also included whenever they are available, as are the patent numbers and DOE grant numbers. The inventions are presented in chronological order of their recommendation by NIST.

## SECTION 2

## STATUS OF RECOMMENDED INVENTIONS

2.0 Introduction

This section contains an index and brief descriptions of those inventions recommended by the Office of Technology Evaluation and Assessment at NIST to the Energy Related Inventions Program office at DOE. Each description includes a brief description of the invention, a summary of the invention status, significant dates, status, and summary of development. The name of the inventor, primary contact for information, and DOE staff coordinator are also provided. The address of the contact is provided if an award has been made. At the time of receipt, DOE assigns a number (DOE No.) to each recommended invention. These numbers are used for tracking purposes and are also the key for sequencing the descriptions presented in this section.

2.1 Index to Recommended Inventions

The following is an index to the recommended inventions showing invention DOE No., invention status and title. Status is described in terms of the following steps in the DOE support process.

|                            |                                                                                                                                                                                                     |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <u>Analysis</u>            | DOE review of recommendation.                                                                                                                                                                       |
| <u>Decision Phase</u>      | Statement of Work Received. Inventor requested to submit supporting documents for procurement action. Prepare purchase request.                                                                     |
| <u>Other Assistance</u>    | Federal Laboratory testing, or business planning assistance, often leading to a grant award outside of ERIP.                                                                                        |
| <u>Procurement</u>         | Request for grant or contract in the procurement process.                                                                                                                                           |
| <u>Award</u>               | Inventor awarded grant or contract. Work commences. Final report due at end of work period.                                                                                                         |
| <u>No request Received</u> | No request for assistance was received from the inventor.                                                                                                                                           |
| <u>No DOE Support</u>      | Sources of support within DOE have been investigated, but recommendation will not be supported, e.g., no area of DOE support could be identified, conflict with other DOE awardees being supported. |
| <u>Complete</u>            | Inventor has complied with all the requirements of the Statement of Work or ERIP assistance is terminated.                                                                                          |

# ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

## INDEX TO RECOMMENDED INVENTIONS

| DOE<br>No. | STATUS           | TITLE                                                                                                  |
|------------|------------------|--------------------------------------------------------------------------------------------------------|
| 0001       | No DOE Support   | Demand Metering System for Electric Energy                                                             |
| 0002       | Other Assistance | Fuel Miser                                                                                             |
| 0003       | Complete         | Hydrogen Generation from Producer Gas by Oxidation- Reduction of Tin                                   |
| 0004       | Complete         | Power Conversion of Energy Fluctuations                                                                |
| 0005       | Complete         | Diesel Engine Conversion System for Gasoline Engines                                                   |
| 0006       | Complete         | Micro-Carburetor                                                                                       |
| 0007       | Complete         | Hydraulically Powered Waste Disposal Device                                                            |
| 0008       | Complete         | Inertial Storage Transmission                                                                          |
| 0009       | Complete         | Heat/Electric Power Conversion via Charged Aerosols                                                    |
| 0010       | Complete         | Scrap Metal Preheating Method and Apparatus                                                            |
| 0011       | Complete         | Solar Collector                                                                                        |
| 0012       | Complete         | High Frequency Energy Saving Device                                                                    |
| 0013       | Complete         | Anti-Pollution System                                                                                  |
| 0014       | Complete         | Aerodynamic Lift Translator                                                                            |
| 0015       | Complete         | Estacron                                                                                               |
| 0016       | Complete         | Method and Apparatus for Vacuum Drying of Commodities                                                  |
| 0017       | Complete         | Osmotic-Hydro Power Generation                                                                         |
| 0018       | Complete         | The Control of the Analysis of Low Carbon Aluminum Steels Using Oxygen Sensors and Iron-Aluminum Alloy |
| 0019       | Complete         | Phenol Methylene Foam Rigid Board Insulation                                                           |
| 0020       | Complete         | Thermal Shade                                                                                          |
| 0021       | Complete         | Waste Oil Utilization System                                                                           |
| 0022       | No DOE Support   | Fuel Burner Attachment                                                                                 |
| 0023       | No DOE Support   | Microgas Dispersions                                                                                   |
| 0024       | Complete         | Can and Bottle Crushing Apparatus                                                                      |
| 0025       | Complete         | Sulfur Removal from Producer Gas-High Temperature                                                      |
| 0026       | Complete         | Compact Energy Reservoir                                                                               |
| 0027       | Complete         | Waste Heat Utilization for Commercial Cooking Equipment                                                |
| 0028       | Other Assistance | Ultraflo                                                                                               |
| 0029       | Complete         | Tuned Sphere Stable Ocean Platforms                                                                    |
| 0030       | Complete         | Method of Removing Sulfur Dioxide from Flue Gases                                                      |
| 0031       | Complete         | Ceramic Rotors and Vanes                                                                               |
| 0032       | Complete         | Wood Gas Reactor                                                                                       |
| 0033       | Complete         | Temperature Indicating Device                                                                          |
| 0034       | Complete         | Delphic Thermogenic Paint (Heat Film)                                                                  |
| 0035       | No DOE Support   | Utilization of Solar Energy by Solar Pond System                                                       |
| 0036       | Complete         | Computerstat                                                                                           |
| 0037       | No DOE Support   | Hotwater Engine                                                                                        |
| 0038       | Complete         | Reduction Volatilizations                                                                              |
| 0039       | No DOE Support   | Lawler Steam Generator and Lawler System of Thermal Oil Recovery                                       |
| 0040       | No DOE Support   | Improved Equipment and Process for Production of Blue Water Gas                                        |
| 0041       | No DOE Support   | Fabrication of Photovoltaic Devices by Solid Phase Growth of Semi-conductors from Metal Layers         |
| 0042       | Complete         | Flue Baffle Assembly                                                                                   |
| 0043       | Complete         | Thermal Gradient Utilization Cycle                                                                     |

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|      |                  |                                                                                                         |
|------|------------------|---------------------------------------------------------------------------------------------------------|
| 0044 | Complete         | New Working Fluids for Increasing the Cycle Efficiencies of Thermal                                     |
| 0045 | Complete         | Bulk Cure Tobacco Barn with Improvements                                                                |
| 0046 | Complete         | Thexon Dehydration                                                                                      |
| 0047 | Complete         | Wastewater Aeration Power Control Device                                                                |
| 0048 | No DOE Support   | Howald Combustor                                                                                        |
| 0049 | No DOE Support   | Automatic Control System for Water Heaters                                                              |
| 0050 | Complete         | Scotsman Fuel Energizer                                                                                 |
| 0051 | No DOE Support   | Thermal Efficiency Construction                                                                         |
| 0052 | No DOE Support   | Air Wedge                                                                                               |
| 0053 | Complete         | High Efficiency Water Heater                                                                            |
| 0054 | Complete         | Optimizer                                                                                               |
| 0055 | No DOE Support   | Electrically Heated Sucker-Rod                                                                          |
| 0056 | Complete         | Flexaflo-The Wet Fuel Dryer                                                                             |
| 0057 | Complete         | X-5 Smoke Eliminator                                                                                    |
| 0058 | Complete         | A Multiple Spark System Using Inductive Storage                                                         |
| 0059 | No DOE Support   | The Volumetric Gas Turbine                                                                              |
| 0060 | Complete         | Electric Transport Refrigerator                                                                         |
| 0061 | Complete         | Fuel Preparation Process                                                                                |
| 0062 | Complete         | Tapered Plate Annular Matrix                                                                            |
| 0063 | Complete         | Fluorobulb                                                                                              |
| 0064 | Complete         | The Mahalla Process--A Hydrometallurgical Method for Extracting Copper                                  |
| 0065 | Complete         | WattVendor                                                                                              |
| 0066 | Complete         | Heat Extractor                                                                                          |
| 0067 | Complete         | Windmill Using Hydraulic System for Energy Transfer and Speed Control                                   |
| 0068 | Other Assistance | Under Compression and Over Compression Free Helical Screw Rotary Compressor                             |
| 0069 | Complete         | Ionic Fuel Control System for the Internal Combustion Engine                                            |
| 0070 | Complete         | Air Cooled Compressor Heat Recovery and Heat Circulation System plus Ambient Air Filter and Air Cleaner |
| 0071 | No DOE Support   | Knight Guard                                                                                            |
| 0072 | No DOE Support   | Utilization of Waste Gas for Boilers and Furnaces in Refineries and Petrochemical Plants                |
| 0073 | Complete         | INTECH                                                                                                  |
| 0074 | Complete         | A Solid Electrolyte Galvanic Solar Energy Conversion Cell                                               |
| 0075 | Complete         | Coke Quenching Steam Generator                                                                          |
| 0076 | Complete         | The Ross Furnace                                                                                        |
| 0077 | Complete         | Variable Heat Refrigeration System                                                                      |
| 0078 | No DOE Support   | System for High Efficiency Power Generation from Low Temperature Sources                                |
| 0079 | Complete         | Oil Well Bit Insert (Tooth), Cutting Article, Ablative                                                  |
| 0080 | No DOE Support   | Improved Unfired Refractory Brick                                                                       |
| 0081 | Complete         | Flash Polymerization                                                                                    |
| 0082 | Complete         | Cool Air Induction                                                                                      |
| 0083 | Complete         | Vertical Solar Louvers                                                                                  |
| 0084 | No DOE Support   | Kinetic Energy Type Pumping System                                                                      |
| 0085 | Complete         | Dielectric Windowshade                                                                                  |
| 0086 | Complete         | Coke Desulfurization                                                                                    |
| 0087 | Complete         | Recovering Uranium From Coal in Situ                                                                    |

# ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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|      |                |                                                                                                           |
|------|----------------|-----------------------------------------------------------------------------------------------------------|
| 0088 | Complete       | System-100                                                                                                |
| 0089 | Complete       | Continuous Casting Process and Apparatus                                                                  |
| 0090 | No DOE Support | Grain Dryer                                                                                               |
| 0091 | Complete       | Mine Brattice                                                                                             |
| 0092 | No DOE Support | Tri-Water, A Combination Air Conditioning and Fire Protection System for a Building.                      |
| 0093 | Complete       | Shelander-Burrows Process for Recovery of Metallic Values from Smelter Emissions                          |
| 0094 | Complete       | Lantz Converter                                                                                           |
| 0095 | No DOE Support | Omni-Horizontal Axis-Wind Turbine                                                                         |
| 0096 | Complete       | Leavell, Vibrationless, Low Noise, High Efficiency, Pneumatic Percussion Tools and Air Compressor Systems |
| 0097 | Complete       | Water Drying System                                                                                       |
| 0098 | Complete       | Process Development to Conserve Energy and Material- --(in the manufacture of)---Bearings                 |
| 0099 | Complete       | Light Weight Composite Trailer Tubes                                                                      |
| 0100 | Complete       | Solaroll                                                                                                  |
| 0101 | Complete       | Controlled Combustion Engine                                                                              |
| 0102 | Complete       | Method of Burning Residual Fuel Oil in Distillate Fuel Oil Burners                                        |
| 0103 | Complete       | Low Voltage Ionic Fluorescent Light Bulb                                                                  |
| 0104 | Complete       | Low Continuous Energy Mass Separation System                                                              |
| 0105 | Complete       | High Frequency Furnace                                                                                    |
| 0106 | No DOE Support | Deep Shaft Hydro-Electric Power                                                                           |
| 0107 | Complete       | Waste Products Reclamation Process                                                                        |
| 0108 | Complete       | Processing Recovery of Aluminum                                                                           |
| 0109 | Complete       | Hydrostatic Meat Tenderizer                                                                               |
| 0110 | Complete       | Improved Windpower Generating System                                                                      |
| 0111 | Complete       | Haspert Mining System                                                                                     |
| 0112 | Complete       | Pump                                                                                                      |
| 0113 | Complete       | Wallace Mold Additive System                                                                              |
| 0114 | No DOE Support | New Energy-Saving Tire for Motor Vehicles                                                                 |
| 0115 | Complete       | Refrigeration System                                                                                      |
| 0116 | No DOE Support | Model 5000 ASEPAK System                                                                                  |
| 0117 | Complete       | "Solarspan" Prism Trap                                                                                    |
| 0118 | Complete       | Energy Adaptive Control of Precision Grinding                                                             |
| 0119 | No DOE Support | Air Ratio Controller (AERTROL)                                                                            |
| 0120 | Complete       | Vapor Heat Transfer Commercial Griddle                                                                    |
| 0121 | No DOE Support | Solar Space Heating for both Retrofit and New Construction                                                |
| 0122 | Complete       | Lean Limit Controller                                                                                     |
| 0123 | Complete       | Comminution of Ores by a Low-Energy Process                                                               |
| 0124 | No DOE Support | Solar Collector                                                                                           |
| 0125 | Complete       | The Turbulator Burner System                                                                              |
| 0126 | Complete       | Vaclaim                                                                                                   |
| 0127 | Complete       | Process and Apparatus to Produce Crude Oil from Tar Sands                                                 |
| 0128 | Complete       | Continuous Distillation Apparatus and Method                                                              |
| 0129 | Complete       | Super U System - Snap Strap                                                                               |
| 0130 | No DOE Support | Furnace Input Capacity Trimming Switch                                                                    |
| 0131 | Complete       | Valve Deactuator for Internal Combustion Engines                                                          |
| 0132 | No DOE Support | Process for Reclaiming and Upgrading Thin-Walled Malleable Waste Material                                 |

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|      |                |                                                                                                                  |
|------|----------------|------------------------------------------------------------------------------------------------------------------|
| 0133 | Complete       | AUTOTHERM Car Comfort System                                                                                     |
| 0134 | Complete       | Expanded Polystyrene Bead Insulation System                                                                      |
| 0135 | Complete       | Point Focus Parabolic Solar Collector                                                                            |
| 0136 | Complete       | Windamper                                                                                                        |
| 0137 | Complete       | A Portable Pollution Free Automobile Incinerator                                                                 |
| 0138 | No DOE Support | Phantom Tube                                                                                                     |
| 0139 | No DOE Support | Transformer With Heat Dissipator                                                                                 |
| 0140 | Complete       | Counter Flow Dual Tube Heat Exchanger                                                                            |
| 0141 | Complete       | New Hydrostatic Transmission                                                                                     |
| 0142 | Complete       | Process for Heatless Production of Hollow Items                                                                  |
| 0143 | Complete       | Oil Well Pump Jack                                                                                               |
| 0144 | No DOE Support | SpaCirc Space Circulation Fan                                                                                    |
| 0145 | Complete       | Solar Conversion by Concentration Cells with Hydrides                                                            |
| 0146 | Complete       | Line Integral Method of Magneto-Electric Exploration                                                             |
| 0147 | No DOE Support | Railroad Switch Heater                                                                                           |
| 0148 | Complete       | Reclamation of Oil and High-Grade Iron Concentrates from Steel Mill Wastes                                       |
| 0149 | Complete       | SCOTCH - (Simple, Cost-Effective, Optimum Temperature Control for Housing)                                       |
| 0150 | Complete       | The Use of Solid Waste Material from a Lubricating Oil and/or Vegetable Oil Refining Operation.                  |
| 0151 | No DOE Support | Film Type Storm Window                                                                                           |
| 0152 | Complete       | Vehicle Exhaust Gas Warm-up System                                                                               |
| 0153 | No DOE Support | A New Equipment Design Concept for Storage of Hot Foods                                                          |
| 0154 | No DOE Support | Rotating Horsehead for Pumping Units                                                                             |
| 0155 | Complete       | Slip Mining                                                                                                      |
| 0156 | Complete       | Direct-Current Electrical Heat-Treatment of Continuous Metal Sheets in a Protective Atmosphere.                  |
| 0157 | Complete       | Magnaseal Method and Means for Sealing Steel Ingot Casting Molds to Stools                                       |
| 0158 | Complete       | Energy Conservative Electric Cable System                                                                        |
| 0159 | Complete       | Non-Tubing Type Lift Device, Described as the NTT Rabbit                                                         |
| 0160 | Complete       | High Efficiency Absorption Refrigeration Cycle                                                                   |
| 0161 | Complete       | duPont Connell Energy Coal Gasification Process                                                                  |
| 0162 | Complete       | Tubular Pneumatic Conveyor Pipeline                                                                              |
| 0163 | Complete       | Thermotropic Plastic Films                                                                                       |
| 0164 | Complete       | Elastomer Energy Recovery Elements and Vehicle Component Applications                                            |
| 0165 | Complete       | Process for Recovering Hydrogen and Elemental Sulfur from Hydrogen Sulfide and/or Mercaptans-Containing Hydrogen |
| 0166 | Complete       | Borehole Angle Control                                                                                           |
| 0167 | Complete       | Vaned Pipe for Pipeline Transport of Solids                                                                      |
| 0168 | Complete       | The Hot Water Saver                                                                                              |
| 0169 | No DOE Support | MIRAFOUNT                                                                                                        |
| 0170 | No DOE Support | Fog System - Low Energy Freeze Protection for Agriculture                                                        |
| 0171 | Complete       | A Method of Preserving Fruits and Vegetables without Refrigeration                                               |
| 0172 | Complete       | GEM Electrostatic Filtration System                                                                              |
| 0173 | Complete       | Thermal Ice Cap                                                                                                  |
| 0174 | No DOE Support | Skate on Plastic Ice Skating System                                                                              |
| 0175 | Complete       | A Low-Energy Carpet Backing System                                                                               |

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# ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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|      |                  |                                                                                                    |
|------|------------------|----------------------------------------------------------------------------------------------------|
| 0176 | No DOE Support   | Self-Contained, Water Proof, Stoker Fired, Fully Automatic, Portable Solid Fuel Furnaces           |
| 0177 | Complete         | The Solar I Option                                                                                 |
| 0178 | Complete         | Process and Apparatus for Producing Cellulated Vitreous Refractory Material                        |
| 0179 | Complete         | Development and Commercialization of Low Cost, Non- Metallic, Solar Systems                        |
| 0180 | Complete         | Adjustable Solar Concentrator (ASC)                                                                |
| 0181 | Complete         | The Karlson Ozone Sterilizer                                                                       |
| 0182 | Complete         | Improved Seal for Geothermal Drill Bit                                                             |
| 0183 | Complete         | Increased Vapor Generator Feature for a Reheat Vapor Generator                                     |
| 0184 | No DOE Support   | Coasting Fuel Shutoff                                                                              |
| 0185 | No DOE Support   | Insulated Garage Door                                                                              |
| 0186 | No DOE Support   | Oil Recovery by In-Situ Exfoliation Drive                                                          |
| 0187 | No DOE Support   | Variable Field Induction Motor                                                                     |
| 0188 | Complete         | Remote Controlled Underground Mining System for Horizontal or Pitching Seams                       |
| 0189 | Complete         | Pump Jack                                                                                          |
| 0190 | Complete         | Oxygen-Conducting Material and Oxygen-Sensing Method                                               |
| 0191 | Complete         | Rotary Heat Pump Air Conditioner, Heater and Ventilator for Automotive, Mobile and Stationary Use. |
| 0192 | Complete         | Closed Cycle Dehumidification Clothes Dryer                                                        |
| 0193 | Complete         | Engine Heating Device                                                                              |
| 0194 | Complete         | Radiant Energy Power Source for Jet Aircraft                                                       |
| 0195 | Complete         | Proportional Current Battery                                                                       |
| 0196 | Complete         | Manufacturing and Using Nitrogen Fertilizer Solutions on a Farm                                    |
| 0197 | Complete         | Frequency Regulator and Protective Devices for Synchronous Generators                              |
| 0198 | No DOE Support   | The Thermatreat System                                                                             |
| 0199 | Complete         | Rotary Coal Combustor and Heat Exchangers                                                          |
| 0200 | Complete         | Removal of Sulfur Dioxide from the Stack Gas of Combustors Burning High Sulfur Fuel                |
| 0201 | Complete         | Hydraulic, Variable, Engine Valve Actuation System                                                 |
| 0202 | Complete         | Wobbling Type Distillation Apparatus                                                               |
| 0203 | Complete         | Microwave Methods and Apparatus for Paving and Paving Maintenance                                  |
| 0204 | No DOE Support   | The Induction Propeller                                                                            |
| 0205 | No DOE Support   | Energy Efficient Solid State Multiple Operator Metallic Arc Welding System                         |
| 0206 | Complete         | Method and Apparatus for High Efficiency Operation of Electromechanical Energy Conversion          |
| 0207 | No DOE Support   | Glass Sheet Manufacturing Method and Apparatus                                                     |
| 0208 | Complete         | CNG Automotive Fuel Cylinders/Gas Transport Modules                                                |
| 0209 | Complete         | Reclaiming Process for Resin Treated Fiberglass                                                    |
| 0210 | Complete         | Ultra High Speed Drilling Device for Use in Hard Rock Formations                                   |
| 0211 | Complete         | Shock Mounted Stratapax Bit                                                                        |
| 0212 | Other Assistance | Water Warden                                                                                       |
| 0213 | Complete         | The Kaunitz Process for Welding Pipe                                                               |
| 0214 | Complete         | Convertible Flat/Drop Trailer                                                                      |
| 0215 | Complete         | Slag Waste Heat Boiler                                                                             |
| 0216 | Complete         | Method and Assembly for Mounting a Semiconductor Element                                           |

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# ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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|      |                  |                                                                                                        |
|------|------------------|--------------------------------------------------------------------------------------------------------|
| 0217 | Complete         | Jointless Advanced Composite Material Tape for Operating Lift Pumps in Oil Wells                       |
| 0218 | Other Assistance | Behemoth                                                                                               |
| 0219 | Complete         | Method for Making Acetaldehyde from Ethanol                                                            |
| 0220 | Complete         | Deep Throat Resistance Welder                                                                          |
| 0221 | Other Assistance | Strainercycle                                                                                          |
| 0222 | Other Assistance | Louver Trombe Solar Storage Unit                                                                       |
| 0223 | Complete         | Minimizing Subsidence Effects during Production of Coal In Situ                                        |
| 0224 | Complete         | Haile Alternate Fuel Grain Dryer                                                                       |
| 0225 | Complete         | ROVAC High Efficiency Low Pressure Air Conditioning System                                             |
| 0226 | No DOE Support   | An Electronic Anemometer System for Locating Air- Infiltration Heat Leaks in Buildings                 |
| 0227 | Complete         | CRM Pipe                                                                                               |
| 0228 | Complete         | EGD Fog Dispersal System                                                                               |
| 0229 | No DOE Support   | Contoured Finger Follower Variable Valve-Timing Mechanism for Internal Combustion Engines              |
| 0230 | Complete         | Absorption Heat Pump Augmented Separation Process                                                      |
| 0231 | Complete         | Natural Gas from Deep-Brine Solutions                                                                  |
| 0232 | Complete         | Method of Separating Lignin and Making Epoxide- Lignin                                                 |
| 0233 | No DOE Support   | Mounted Steerable Ripper for Deep Soil Ripping and Subsoil Operations                                  |
| 0234 | Complete         | Geodesic Solar Paraboloid                                                                              |
| 0235 | Complete         | Single Stage Anaerobic Digestion Process                                                               |
| 0236 | Complete         | Steam Turbine Packing Ring                                                                             |
| 0237 | Complete         | Hicks Alter-Brake System/Electric Charging Apparatus for Ground Vehicles                               |
| 0238 | Complete         | Industrial and Residential Clothes Dryer Automatic Shut-Off at Dryness                                 |
| 0239 | Complete         | Electrochemical Separation and Concentration of Sulfur-Containing Gases from Gas Mixtures              |
| 0240 | No DOE Support   | All Steam-Heated Sadiron for Commercial Use                                                            |
| 0241 | Complete         | Polysulfide Oil Field Corrosion Control System                                                         |
| 0242 | Complete         | New Petersburg Beam Trawl                                                                              |
| 0243 | Complete         | An Electronic/Pneumatic Ejector System for Producing an Aluminum Rich Concentrate from Municipal Waste |
| 0244 | Complete         | CHARLIE - Trademark - Federally Registered #1123957                                                    |
| 0245 | Complete         | Improved Oil Well Pumping Unit                                                                         |
| 0246 | No DOE Support   | Maximum Cruise Performance                                                                             |
| 0247 | Complete         | Energy Conservation by Improved Control of Bulk Power Transfers on Interconnected Systems              |
| 0248 | Complete         | Dyna-Bite Traction Intensifier, Model Agri, for Agricultural Tractors or the Like                      |
| 0249 | Complete         | Subsurface Flow Control (Gas Wells) and High Gas- Oil-Ratio Oil Wells                                  |
| 0250 | Complete         | A System to Adapt Diesel Engines to the Use of Crude Oils                                              |
| 0251 | Complete         | Process and Apparatus for Reducing the Energy Required to Separate Liquids by Distillation             |
| 0252 | Complete         | Thermal Bank                                                                                           |
| 0253 | Complete         | High Performance Heat Pump                                                                             |
| 0254 | Complete         | "Turbo-Glo" Immersion Furnace                                                                          |
| 0255 | No DOE Support   | Method and Apparatus for Scrubbing Gas - Scrubbing Apparatus                                           |

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# ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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|      |                  |                                                                                               |
|------|------------------|-----------------------------------------------------------------------------------------------|
| 0256 | Other Assistance | Method and Apparatus for Irrigating Container Grown Plants                                    |
| 0257 | Complete         | Method and Apparatus for Melting Snow                                                         |
| 0258 | Complete         | Corrosion Protection Process for Bore Hole Tool                                               |
| 0259 | Complete         | Hydrostatic Support Sleeve and Rod - Gas Release Probe                                        |
| 0260 | Complete         | Method and Apparatus for Handling and Dry Quenching Coke                                      |
| 0261 | Other Assistance | A New Apparatus for Making Asphalt Concrete                                                   |
| 0262 | Complete         | Energy Saving Pump and Pumping System                                                         |
| 0263 | No DOE Support   | Method for Reconditioning Rivetless Chain Links                                               |
| 0264 | Complete         | Desulfurization of Coal                                                                       |
| 0265 | Complete         | Flozone method and Apparatus for Direct Application of Treatment Liquid to Growing Vegetation |
| 0266 | Other Assistance | Energy Conversion Method                                                                      |
| 0267 | Complete         | Integrated Gasification of Coal, Municipal Solid Wastes and Sludge                            |
| 0268 | Complete         | Apparatus for Enhancing Chemical Reactions                                                    |
| 0269 | No DOE Support   | Refrigerant Accumulator and Charging Apparatus                                                |
| 0270 | Complete         | Method of Energy Recovery for Wastewater Treatment                                            |
| 0271 | Complete         | Hydrogen Storage System                                                                       |
| 0272 | Complete         | V-Plus System                                                                                 |
| 0273 | No DOE Support   | Open Cycle Latent Heat Engine                                                                 |
| 0274 | Complete         | Flexible Lighting - Fluorescent Lighting Operating at Radio Frequency                         |
| 0275 | Complete         | Low Head - High Volume Pump                                                                   |
| 0276 | Complete         | Gas Concentration Cells as Converters of Heat into Electrical Energy                          |
| 0277 | No DOE Support   | Electronic Conveyor Control Apparatus                                                         |
| 0278 | Complete         | Complete System for Large Solar Water Heating and Storage                                     |
| 0279 | Complete         | Method and Means for Preventing Frost Damage to Crops                                         |
| 0280 | Complete         | Down Hole and Above Ground Resistance Heating for Paraffin Elimination                        |
| 0281 | Complete         | Sun Synchronous Solar Powered Refrigerator                                                    |
| 0282 | Complete         | Insulated Siding                                                                              |
| 0283 | Complete         | Aluminum Roofing Chips                                                                        |
| 0284 | Complete         | Atomized Oil-Injected Rotary Screw Compressors                                                |
| 0285 | Award            | Novel Fluid Ring (F/R) Seal Systems for Railroad Axle Bearing Systems                         |
| 0286 | No DOE Support   | Use of Pulse-Jet for Atomization of Coal/Water Mixture                                        |
| 0287 | Complete         | Automatic Variable Pitch Marine Propeller                                                     |
| 0288 | No DOE Support   | Dickinson Pure Air Combustion (DIPAC) and Modified DIPAC (MODIPAC)                            |
| 0289 | Complete         | An Earthquake Barrier                                                                         |
| 0290 | Complete         | Low Energy Ice Making Apparatus                                                               |
| 0291 | Complete         | Selective Zone Isolation for HVAC System                                                      |
| 0292 | Complete         | Roof Construction Having Membrane and Photo Cells                                             |
| 0293 | Complete         | "Therm-A-Valve" - Insulated Valve Coverings                                                   |
| 0294 | Complete         | Highway Power Patcher                                                                         |
| 0295 | Complete         | Improved Method of Electroplating Aluminum for Corrosion Resistance                           |
| 0296 | Complete         | Shower Bath Economizer                                                                        |
| 0297 | Complete         | Series (Two-Wire) V-Controller                                                                |
| 0298 | Complete         | Three Tenths Degree Kelvin Closed Cycle Refrigeration System                                  |

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# ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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|      |                |                                                                                                     |
|------|----------------|-----------------------------------------------------------------------------------------------------|
| 0299 | Complete       | Process for Using Cocurrent Contacting Distillation Column                                          |
| 0300 | Complete       | Casing Stabbing Apparatus                                                                           |
| 0301 | Complete       | Pump Control System for Windmills                                                                   |
| 0302 | Complete       | Carri-Gel Impact Breaker and Counterflow Impact Rock Breakers                                       |
| 0303 | Complete       | Battery Heating Device                                                                              |
| 0304 | Complete       | Exfoliated Graphite Fibers                                                                          |
| 0305 | Complete       | Automatic Filter Network Protection, Failure Detection and Correction System and Method             |
| 0306 | Complete       | An Efficiency Computer for Heated or Air Conditioned Buildings                                      |
| 0307 | Complete       | Vortex Generators for Aft Regions of Aircraft Fuselages                                             |
| 0308 | Complete       | Binary Azeotropic, Hot Gas, Fat Extraction Process                                                  |
| 0309 | No DOE Support | Process of Smelting with Submerged Burner                                                           |
| 0310 | Complete       | Portable Wastewater Flow Metering Device                                                            |
| 0311 | Complete       | Auxiliary Truck Heater                                                                              |
| 0312 | Complete       | The "Jones AWT", a Micro-Computer-Based Automatic Well Tester for Use of Producing Oil Wells        |
| 0313 | Complete       | Process Controller for Stripper Oil Well Pumping Units                                              |
| 0314 | Complete       | Rolling Filter Apparatus                                                                            |
| 0315 | Complete       | Method of Processing Biodegradable Organic Material                                                 |
| 0316 | Complete       | Thrust Impact Rock Splitter                                                                         |
| 0317 | Complete       | Edge-Illuminated Multi-Junction (VMJ) Solar Cell                                                    |
| 0318 | Complete       | Bi-Polar Electrode for Hall-Heroult Electrolysis                                                    |
| 0319 | Complete       | Removal of Hydrogen Sulfide from a Gas Stream                                                       |
| 0320 | No DOE Support | Coal Gasification with Carbon Dioxide and Lime Recycling                                            |
| 0321 | No DOE Support | Process for Recovery of Oil from Oil Shale Simultaneously Producing Hydrogen                        |
| 0322 | Complete       | Electrical Resistance Cooking Apparatus with Automatic Circuit Control                              |
| 0323 | Complete       | Rolling Mill for Reduction of Moisture Content in Waste Material                                    |
| 0324 | Complete       | Method and Composition for Enhancement of Mycorrhizal Development by Foliar Fertilization           |
| 0325 | Complete       | Low Cost, Low Energy Machine and Method for Continuous Casting Non-Ferrous Strip and Composites     |
| 0326 | Complete       | A Mechanical Stemming Device for Use in Explosive Loaded Blast Holes                                |
| 0327 | Complete       | Square Pattern Irrigation Sprinkler                                                                 |
| 0328 | Complete       | Multi-Directional Pre and Post-Heating Device for Thermal Flamecutting                              |
| 0329 | No DOE Support | Modularized Pneumatic Tractor with Debris Liquifier                                                 |
| 0330 | Complete       | Vacuum Heat Treating Furnace and Quench System with Drop Transfer                                   |
| 0331 | Complete       | Cyclic Char Combustion for Engines, Boilers and Gasifiers                                           |
| 0332 | No DOE Support | Volk Pistachio Huller                                                                               |
| 0333 | Complete       | Laser Based Machine for Die and Prototype Manufacturing                                             |
| 0334 | Complete       | So-Luminaire Natural Daylighting Unit                                                               |
| 0335 | No DOE Support | Robotic Bridge Observation and Information System                                                   |
| 0336 | Complete       | A Carbonaceous Selective Absorber for Solar Thermal Energy Collection and Process for Its Formation |
| 0337 | Complete       | An Air Operated Hydraulic Power Unit                                                                |
| 0338 | Complete       | Downhole Pneumatic Turbine Motor for Geothermal Energy                                              |
| 0339 | Complete       | Recycoil II                                                                                         |

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ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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|      |                  |                                                                                          |
|------|------------------|------------------------------------------------------------------------------------------|
| 0340 | Complete         | Separation of Adsorbed Components by Variable Temperature Desorption                     |
| 0341 | Complete         | High Pressure Liquid Jets as a Tool for Disintegrating Organic and Non-Organic Materials |
| 0342 | Complete         | Raw Fines Medium Coal Washing System                                                     |
| 0343 | No Request Recvd | Electronic Octane                                                                        |
| 0344 | Complete         | Machine for Separating Concrete from Steel                                               |
| 0345 | Complete         | Tulleners Wave Piercer                                                                   |
| 0346 | Complete         | Ultra-Pure Water System for Hospitals                                                    |
| 0347 | Complete         | Oxide Dispersion Strengthened Aluminum Alloys                                            |
| 0348 | Complete         | Hydrogen Sulfide Removal for Natural Gas                                                 |
| 0349 | No Request Recvd | Three Roll Tension Stand                                                                 |
| 0350 | Complete         | Method and Apparatus for Testing Soil                                                    |
| 0351 | Complete         | Flash Gate Board                                                                         |

2.2 Brief Descriptions of Recommended Inventions

The following presents brief descriptions of each of the inventions recommended by the Office technology Evaluation and Assessment at NIST to the Energy Related Inventions Program office at DOE. Each description includes a brief description of the invention, a summary of the invention status, significant dates, status, and summary of development. The name of the inventor, primary contact for information, and DOE staff coordinator are also provided. The address of the contact is provided if an award has been made. The descriptions are presented in DOE number sequence. Section 3 presents four cross reference lists for locating specific invention descriptions. These lists provide cross reference between DOE No. and Inventor name, DOE No. and Contact name, DOE No. and Inventor state, and Doe No. and invention classification.

DOE No: 0001 DOE Coord: G. K. Ellis

Title: Demand Metering System for Electric Energy

Description: The invention provides a means whereby a consumer's electric meter can be adjusted by the electric company to run at a faster rate at times of greater loads upon the utility system -- load leveling.

Inventor: Willard Graves  
State : MD

Contact:  
Murray G Lowenthal

Status: No DOE Support Status Date: 07/07/77 OERI No.: 000019

Patent Status : Patent # - 3683343  
Development Stage : Concept Development  
Technical Category: Miscellaneous

Recv by NIST : 05/23/75  
Recom. by NIST : 02/12/76

Summary: No area of appropriate DOE support could be identified.

\*\*\*\*\*

DOE No: 0002 DOE Coord: G. K. Ellis

Title: Fuel Miser

Description: The device is an attachment which can be used to retrofit a room thermostat with a synchronous motor- driven clock timer and an auxiliary heating element to enable it to have a temperature set-back cycle.

Inventor: Rita Paleschuck  
State : NY

Contact:  
Rita Paleschuck

Status: Other Assistance Status Date: 07/15/76 OERI No.: 000100

Patent Status : Not Applied For  
Development Stage : Production & Marketing  
Technical Category: Buildings, Structures & Components

Recv by NIST : 07/14/75  
Recom. by NIST : 02/19/76

Summary: No research and development required, since the device is on the market. A generic brochure was written and published on the "need for automatic temperature setback." Extensive distribution was accomplished through DOE's Office of Public Affairs' "supermarket handout" program and General Services Administration's Consumer Information Center.

DOE No: 0003                      DOE Coord: J.Aellen

Title: Hydrogen Generation from Producer Gas by Oxidation- Reduction of Tin

Description:     A new approach to the generation of tonnage hydrogen from carbonaceous fuels. Two reactions: / steam with tin, whereby hydrogen is produced, and the reduction of the tin oxide produced in the first reaction back to tin.

Inventor: Donald C Erickson  
State : MD

Contact:  
Donald C Erickson  
Director of Research  
Energy Concepts Co.  
1704 South Harbor Lane  
Annapolis MD 21401  
301-266-6521

Status: Complete                      Status Date: 03/18/81                      OERI No.: 000003

Patent Status : Patent Applied For  
Development Stage : Laboratory Test  
Technical Category: Other Natural Sources

Recv by NIST : 05/07/75  
Recom. by NIST : 05/21/76  
Award Date : 07/12/78     Award Amount: \$ 80,820 Grant No: FG01-78IR10103  
Contract Period: 07/12/78 - 03/18/81

Summary:     A grant was awarded and completed for the grantee to identify the optimum operating conditions, and to do an economic study. Results showed efficiency less than predicted - which in turn, leads to marginal economics. There is a possibility for improvement with more R & D. Inventor seeking licensee.

\*\*\*\*\*

DOE No: 0004                      DOE Coord: G.K.Ellis

Title: Power Conversion of Energy Fluctuations

Description:     A solid state device is claimed that can transfer thermal energy into usable electrical power with high efficiency, by cascading large numbers of such circuits.

Inventor: Joseph C Yater  
State : MA

Contact:  
Joseph C Yater  
Autumn Lane  
Lincoln MA 01773  
617-259-8544

Status: Complete                      Status Date: 06/15/77                      OERI No.: 000230

Patent Status : Patent Applied For  
Development Stage : Concept Development  
Technical Category: Direct Solar

Recv by NIST : 09/18/75  
Recom. by NIST : 06/04/76  
Award Date : 06/04/76     Award Amount: \$ 40,400 Grant No:  
Contract Period: 06/04/76 - 06/15/77

Summary:     A grant was awarded to define an adequate development plan. The plan was received and reviewed. Subsequent review indicated the scheme to be incompatible with present state-of-art of micro- device manufacturing.

DOE No: 0005 DOE Coord: G. K. Ellis

Title: Diesel Engine Conversion System for Gasoline Engines

Description: The system is proposed for converting a standard gasoline auto engine into a diesel engine

Inventor: George C Austin  
State : CA

Contact:  
George C Austin  
Austin Tool Company  
2239 North Loma Ave.  
South El Monte CA 91605  
213-442-7338

Status: Complete Status Date: 11/20/78 OERI No.: 000088

Patent Status : Not Applied For  
Development Stage : Engineering Design  
Technical Category: Combustion Engines & Components

Recv by NIST : 06/30/75  
Recom. by NIST : 08/12/76  
Award Date : 11/20/77 Award Amount: \$ 18,000 Grant No: EM78-G-01-4263  
Contract Period: 11/20/77 - 11/20/78

Summary: A grant was awarded for a marketing study was awarded, and completed. Significant interest by those surveyed was expressed in the Austin diesel conversion, if they were having their engine rebuilt.

\*\*\*\*\*

DOE No: 0006 DOE Coord: D. G. Mello

Title: Micro-Carburetor

Description: A new kind of carburetor which is claimed to be fuel-saving and pollution-reducing.

Inventor: Albert B Csonka  
State : NY

Contact:  
Albert B Csonka  
FERRO Techincal Co.  
109 Larchmont Road  
Buffalo NY 14214  
716-833-3122

Status: Complete Status Date: 02/13/80 OERI No.: 000225

Patent Status : Patent Applied For  
Development Stage : Engineering Design  
Technical Category: Combustion Engines & Components

Recv by NIST : 09/15/75  
Recom. by NIST : 08/17/76  
Award Date : 09/15/77 Award Amount: \$193,500 Grant No:  
Contract Period: 09/15/77 - 12/17/80

Summary: A fixed price development contract of \$193,500 was awarded to build a working micro-carburetor, sized to fit a late model, standard 350 cubic inch V-8 engine. Contract is being administered by Office of Transportation Programs, DOE. Carburetor was tested by NASA's Jet Propulsion Lab and report #JPL 81-75, August, 1981 shows improvements ranging from 9 to 18% over standard carburetor.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0007 DOE Coord: G. K. Ellis

Title: Hydraulically Powered Waste Disposal Device

Description: The device is to replace conventional food waste disposal units which are powered by electric motors.

Inventor: David Virley  
State : CA

Contact:  
Len Spelber  
Wastemate Corporation  
4830 Viewridge Avenue  
San Diego CA 92123  
619-292-3122

Status: Complete Status Date: 08/20/79 OERI No.: 000387

Patent Status : Patent # - 3700178  
Development Stage : Production & Marketing  
Technical Category: Miscellaneous

Recv by NIST : 11/10/75  
Recom. by NIST : 08/26/76  
Award Date : 08/20/78 Award Amount: \$ 28,000 Grant No: EM78-G-01-5034  
Contract Period: 08/20/78 - 08/20/79

Summary: A grant was awarded to prepare a qualified business plan to assist in acquiring the necessary capital funding. The company went public and raised \$1.5 million which was used mainly to buy production tools. The company is now in production. Follow-on financing desired by grantee.

\*\*\*\*\*

DOE No: 0008 DOE Coord: D.G.Mello

Title: Inertial Storage Transmission

Description: The device is a system for improving the efficiency and reducing the fuel consumption of a motor vehicle, utilizing a regenerative hydraulic system to store the kinetic energy from deceleration for use in accelerating the vehicle.

Inventor: Vincent E Carman  
State : OR

Contact:  
Fred Tunmore  
Advanced Energy Systems  
Unit #3, 595 Taylor Way  
Belmont CA 94002  
503-256-1111

Status: Complete Status Date: 08/31/82 OERI No.: 000423

Patent Status : Patent # - 3903696  
Development Stage : Prototype Test  
Technical Category: Transportation Systems, Vehicles & Components

Recv by NIST : 11/12/75  
Recom. by NIST : 09/03/76  
Award Date : 07/21/81 Award Amount: \$ 49,541 Grant No: FG01-81CS15069  
Contract Period: 07/21/81 - 08/31/82

Summary: A grant of \$49,541 was awarded for final preparation of vehicle to present to EPA for testing. Olsen Corporation has tested the device. Ownership changed recently and financing is at a reputed level of \$3.2 million with 7 employees. Product is available for distribution. Engineering details available from company.

DOE No: 0009 DOE Coord: D. G. Mello

Title: Heat/Electric Power Conversion via Charged Aerosols

Description: This device is to convert thermal energy to electric energy without the use of moving parts.

Inventor: Alvin M Marks  
State : NY

Contact:  
Alvin M Marks  
Marks Polarized Corp.  
153-16 Tenth Avenue  
Whitestone NY 11358  
212-767-9600

Status: Complete Status Date: 05/09/79 OERI No.: 000151

Patent Status : Patent Applied For  
Development Stage : Laboratory Test  
Technical Category: Miscellaneous

Recv by NIST : 08/04/75  
Recom. by NIST : 09/13/76  
Award Date : 03/01/78 Award Amount: \$ 50,000 Grant No: EU78-G016225  
Contract Period: 03/01/78 - 08/31/78

Summary: A grant was awarded to construct and test an Electro Gas Dynamics Generator, and then use this device to investigate the condensation charging of a steam jet. This project was followed by a three year project funded by another DOE program, to build and test a 10kw laboratory model of the device, of which the first year funding was \$199,077. (The company's work force averages 25 people.)  
\*\*\*\*\*

DOE No: 0010 DOE Coord: G. K. Ellis

Title: Scrap Metal Preheating Method and Apparatus

Description: The device provides a means of extracting waste heat from hot ingots and billets and utilizing this waste heat to preheat scrap steel prior to placing it in an electric-arc furnace.

Inventor: Harrison Robert Woolworth  
State : WA

Contact:  
Harrison Robert Woolworth  
International Preheater  
P.O. Box #88218  
Tukwila Branch  
Seattle WA 98188  
206-852-1992

Status: Complete Status Date: 10/23/78 OERI No.: 000421

Patent Status : Not Applied For  
Development Stage : Production Engineering  
Technical Category: Industrial Processes

Recv by NIST : 11/11/75  
Recom. by NIST : 09/29/76  
Award Date : 12/23/77 Award Amount: \$170,000 Grant No: EM78-G-01-1797  
Contract Period: 12/23/77 - 12/23/78

Summary: A grant was awarded to design and fabricate hardware; and to operate a system, utilizing waste heat for preheating scrap steel, in a working specialty steel mill. A 20% energy saving was demonstrated. Steel company interest has developed. Inventor obtained an SBA guaranteed loan, has built an operating unit at a steel plant in Knoxville, Tennessee, and has several additional \$500,000 units on order. The company employs three people.

DOE No: 0011 DOE Coord: D. G. Mello

Title: Solar Collector

Description: This is a composite extruded aluminum section -- incorporating a cylindrical absorption tube that carries the working fluid. The collector surface is in the form of an Archimedes Spiral and a parabolic curve to maximize the collection angle and eliminate the need to reposition the collector.

Inventor: Ronald H Smith  
State : CA

Contact:  
Ronald H Smith  
150 Green Street  
San Francisco CA 94111  
415-398-6813

Status: Complete Status Date: 11/19/80 OERI No.: 000233

Patent Status : Not Applied For  
Development Stage : Production Engineering  
Technical Category: Direct Solar

Recv by NIST : 09/09/75  
Recom. by NIST : 09/29/76  
Award Date : 05/17/78 Award Amount: \$ 46,884 Grant No: EM78-G019214  
Contract Period: 05/17/78 - 11/19/80

Summary: A grant of \$46,884 was awarded to Solergy, Inc., to initiate a series of marketing studies to determine the attitudes of Western U.S. manufacturers, distributors and designers, regarding prospects for successful installation of passive solar systems in new buildings. Survey results were used by Solergy to aid their marketing and manufacturing plans. Company is now out of business.  
\*\*\*\*\*

DOE No: 0012 DOE Coord: G.K.Ellis

Title: High Frequency Energy Saving Device

Description: This invention consists of a high-frequency generator, to excite one of several fluorescent lights, replacing the normal ballast transformer, and allowing the system to operate at substantially higher efficiency.

Inventor: Frank R Summa  
State : NY

Contact:  
Thomas J Russo  
100 Forest Avenue  
Staten Island NY 10310  
212-273-0248

Status: Complete Status Date: 12/31/82 OERI No.: 000448

Patent Status : Patent Applied For  
Development Stage : Engineering Design  
Technical Category: Buildings, Structures & Components

Recv by NIST : 10/28/75  
Recom. by NIST : 09/30/76  
Award Date : 12/31/80 Award Amount: \$ 30,000 Grant No:  
Contract Period: 12/31/80 - 12/31/82

Summary: A grant was awarded to engage the services of Niesi-Fitzmaurice and Associates, Inc., to conduct a marketing study and prepare a preliminary business plan for the purpose of commercializing the technology.

DOE No: 0013 DOE Coord: P.M.Hayes

Title: Anti-Pollution System

Description: This device utilizes a high speed turbine to refine exhaust gases and recirculate the unburned portions of that gas to the engine.

Inventor: Ranendra K Bose  
State : VA

Contact:  
Ranendra K Bose  
14346 Jacob Lane  
Centreville VA 22020  
703-266-2379

Status: Complete Status Date: 01/03/79 OERI No.: 000053

Patent Status : Patent # - 3861142  
Development Stage : Limited Production/Marketing  
Technical Category: Transportation Systems, Vehicles & Components

Recv by NIST : 06/03/75  
Recom. by NIST : 09/30/76  
Award Date : 04/04/78 Award Amount: \$ 40,000 Grant No: EM77-G014222  
Contract Period: 04/04/78 - 01/03/79

Summary: A grant of \$40,000 was awarded, and a prototype was built and tested. Project goals were met. Final Report was accepted. Inventor plans to seek private assistance for commercialization.

\*\*\*\*\*

DOE No: 0014 DOE Coord: G K Ellis

Title: Aerodynamic Lift Translator

Description: This device is a wind-activated power generating system intended to provide large power outputs in regions where the prevailing wind direction does not vary appreciably during the year. The device also has application in low-head hydro.

Inventor: Daniel J Schneider  
State : TX

Contact:  
Daniel J Schneider  
Route #1, Box #81  
Justin TX 76247  
817-430-0174

Status: Complete Status Date: 01/11/79 OERI No.: 000146

Patent Status : Not Applied For  
Development Stage : Production Engineering  
Technical Category: Other Natural Sources

Recv by NIST : 08/15/75  
Recom. by NIST : 09/30/76  
Award Date : 01/11/78 Award Amount: \$ 50,000 Grant No: EG-77-G01-7114  
Contract Period: 01/11/78 - 01/11/79

Summary: A grant of \$50,000 was awarded to develop performance and cost data for the "Schneider Aerodynamic Power Generator". The inventor is currently pursuing the hydro application, and asked for program assistance in obtaining venture capital. The translator still requires technical development.

DOE No: 0015

DOE Coord: D.Mello

Title: Estacron

Description: Estacron consists of an aggregate of Portland cement, fly ash, stack dust, and polyethylene. It has significant potential as a light-weight and energy-conservative construction material.

Inventor: Dante A Raponi  
State : NC

Contact:  
James L Bullock  
Suite #403, Minges Building  
P. O. Box #7151  
Greenville NC 27834  
919-752-1138

Status: Complete

Status Date: 09/28/79

OERI No.: 000393

Patent Status : Patent Applied For  
Development Stage : Laboratory Test  
Technical Category: Buildings, Structures & Components

Recv by NIST : 10/28/75  
Recom. by NIST : 09/30/76  
Award Date : 09/28/79 Award Amount: \$101,388 Grant No: FG01-79IR10221  
Contract Period: 09/28/79 - 01/31/82

Summary: A grant of \$101,388 was awarded to conduct an application engineering and economic analysis of the material, Estacron, in order to assess its material characteristics and to recommend product applications. Results appear indeterminate. Inventor seeks funding for pilot plant design.  
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DOE No: 0016

DOE Coord: G. K. Ellis

Title: Method and Apparatus for Vacuum Drying of Commodities

Description: This invention describes a new method of drying commodities, primarily applicable to such grains as corn, rice, and soybeans, by alternately exposing the commodities to dry heated air and to a vacuum.

Inventor: John W Bruce  
State : SD

Contact:  
John W Bruce  
West Highway, #16  
Mitchell SD 57301  
605-996-8335

Status: Complete

Status Date: 03/30/81

OERI No.: 000486

Patent Status : Patent # - 3914874  
Development Stage : Engineering Design  
Technical Category: Industrial Processes

Recv by NIST : 10/10/75  
Recom. by NIST : 11/30/76  
Award Date : 03/30/80 Award Amount: \$ 52,917 Grant No: FG01-78IR04211  
Contract Period: 03/30/80 - 03/30/81

Summary: A grant of \$52,917 was awarded to design, fabricate, and demonstrate a device for efficiently drying agriculture commodities. The Montana Energy and MHD Development Institute is managing the technical aspects of the program. In addition, the inventor received \$32,000 to dry whey from a private sector source. Results from all tests appear indeterminate. Inventor is interested in selling or licensing patent rights and has ceased work on the technology.

DOE No: 0017 DOE Coord: D. G. Mello

Title: Osmotic-Hydro Power Generation

Description: The invention uses a reverse osmosis to produce high pressure liquid that can subsequently be passed through a hydraulic turbine to produce electric power.

Inventor: David W Doyle  
State : VA

Contact:  
David W. Doyle, V.P.  
Intertechnology Corp.  
100 Main Street  
Warrenton VA 22186

Status: Complete Status Date: 05/01/78 OERI No.: 000619

Patent Status : Patent Applied For  
Development Stage : Laboratory Test  
Technical Category: Other Natural Sources

Recv by NIST : 01/21/76  
Recom. by NIST : 01/14/77  
Award Date : 08/11/77 Award Amount: \$ 48,950 Grant No: EG77-G014066  
Contract Period: 08/11/77 - 05/01/78

Summary: A grant of \$48,950 was given for research and development of membranes suitable for use in a "Osmo-Hydro Power" system. Studies included membrane long-term effects, polarization dilution, and concentration. The research was judged as high quality by the cognizant DOE program office.  
\*\*\*\*\*

DOE No: 0018 DOE Coord: G.K.Ellis

Title: The Control of the Analysis of Low Carbon Aluminum Steels Using Oxygen Sensors and Iron-Aluminum Alloy

Description: The production of Al "killed" steel is intended to be controlled by the use of Fe-Al alloys instead of Al and by the use of oxygen probes to control the amounts of Al or oxygen in the melt.

Inventor: G R Fitterer  
State : PA

Contact:  
G R Fitterer  
P.O. Box #206  
Oakmont PA 15139  
412-828-0233

Status: Complete Status Date: 09/14/78 OERI No.: 000177

Patent Status : Patent # - 3773641 and others  
Development Stage : Production & Marketing  
Technical Category: Industrial Processes

Recv by NIST : 08/01/75  
Recom. by NIST : 01/31/77  
Award Date : 09/14/77 Award Amount: \$ 99,600 Grant No: EC77-G-01-5034  
Contract Period: 09/14/77 - 09/14/78

Summary: A grant of \$99,600 was awarded for a system to conserve energy by monitoring and controlling the amount of oxygen in a low carbon aluminum killed steel melt. The system was highly successful. On basis of the success, the steel company involved has initiated a research effort to apply the technology to other ferro melts. The technology is reported to have saved a steel company, doing \$18 million/yr business from bankruptcy.

DOE No: 0019

DOE Coord: P.M.Hayes

Title: Phenol Methylene Foam Rigid Board Insulation

Description: This invention is a urea-formaldehyde phenol methylene modified form of insulating board material. Properties are similar to others on the market except for its fire retardancy and the low toxicity of its combustion products.

Inventor: Walter J Hasselman, Jr  
State : NY

Contact:  
Clair H Reinbergen, Pres.  
C. P. Chemical Co., Inc.  
25 Home Street  
White Plains NY 10606  
914-428-2517

Status: Complete

Status Date: 09/12/79

OERI No.: 000205

Patent Status : Patent Applied For  
Development Stage : Limited Production/Marketing  
Technical Category: Buildings, Structures & Components

Recv by NIST : 08/18/75  
Recom. by NIST : 02/04/77  
Award Date : 09/13/78 Award Amount: \$ 29,900 Grant No: EU78-G-01-6603  
Contract Period: 09/13/78 - 09/12/79

Summary: A grant was awarded to study physical properties of proprietary insulating material, and to determine the optimum ratios of base chemicals. Additional testing on fire properties revealed a double five-hour rating over competitive products. The products are available for sale.  
\*\*\*\*\*

DOE No: 0020

DOE Coord: D. G. Mello

Title: Thermal Shade

Description: The device is a multi-layer window shade to be fitted to conventional windows and to retract into a small space -- uses reflective surface coatings and with dead air spaces between the layers to reduce heat transfer.

Inventor: Thomas P Hopper  
State : NH

Contact:  
Thomas P Hopper  
103 Old Loudon Road  
Concord NH 03301  
603-225-7554

Status: Complete

Status Date: 01/06/79

OERI No.: 000839

Patent Status : Patent Applied For  
Development Stage : Production Engineering  
Technical Category: Buildings, Structures & Components

Recv by NIST : 03/26/76  
Recom. by NIST : 02/28/77  
Award Date : 05/17/78 Award Amount: \$ 50,707 Grant No: EM78-G014268  
Contract Period: 05/17/78 - 01/06/79

Summary: A grant was awarded for the investigations and research of sheet material, seal configurations, and assemblies with third party testing. In addition, marketing assistance was supplied by MIT Innovation Center. Product is now being market tested. It is available for licensing. Last reported sales of \$20,000 per month with 40 people working 2 shifts. Similar devices are being sold by other companies.

DOE No: 0021 DOE Coord: G. K. Ellis

Title: Waste Oil Utilization System

Description: This invention would utilize existing emulsification machinery to add a mixture of used lubricating oil and water to fuel oil used in large power plant boilers. Key point is the use of existing additives in fuel oil to prevent boiler tube deposits.

Inventor: Robert S Norris  
State : MA

Contact:  
Robert S Norris  
Energy Conservation Systems  
Ten Starboard Way  
Box #472  
West Dennis MA 02670  
617-398-3430

Status: Complete Status Date: 03/30/81 OERI No.: 000613

Patent Status : Patent # - 3002826 and others  
Development Stage : Production & Marketing  
Technical Category: Industrial Processes

Recv by NIST : 08/25/75  
Recom. by NIST : 02/28/77  
Award Date : 03/30/80 Award Amount: \$ 50,000 Grant No: EM78-G-01-4261  
Contract Period: 03/30/80 - 03/30/81

Summary: A grant of \$50,000 was awarded for the purpose of a market survey for use of waste automotive crankcase lubricating oil as a fuel additive to prevent boiler tube deposits, augment energy availability, and minimize environmental pollution. Utility plants, the prime potential user, were found to have little incentive to purchase the cheaper additive. Product available for licensing.

\*\*\*\*\*

DOE No: 0022 DOE Coord: D. G. Mello

Title: Fuel Burner Attachment

Description: Device to reduce oil consumption by introducing air to oil stream of the burner.

Inventor: Herbert G Lehmann  
State : CT

Contact:  
Herbert G Lehmann

Status: No DOE Support Status Date: 09/19/77 OERI No.: 000537

Patent Status : Not Applied For  
Development Stage : Laboratory Test  
Technical Category: Buildings, Structures & Components

Recv by NIST : 12/29/75  
Recom. by NIST : 02/28/77

Summary: The inventor had his device tested without DOE funding by a private contractor and advised DOE that these tests demonstrated his device to be unsuccessful and that he is withdrawing his device from DOE consideration.

DOE No: 0023 DOE Coord: D. G. Mello

Title: Microgas Dispersions

Description: Device consists of a motor, pump, bubble machine, and valves, uses #2 fuel oil, compressed air, surfactant, to maintain bubbles. Resulting mixture burns like natural gas, which burner can use interchangeably, thereby allowing industrial burners to switch fuels. Can also use small amounts of coal dust in the mixture.

Inventor: Int'l MGD Companies  
State : MI

Contact:  
James E Luber

Status: No DOE Support Status Date: 10/24/78 OERI No.: 000951

Patent Status : Patent # - 3900420  
Development Stage : Laboratory Test  
Technical Category: Other Natural Sources

Recv by NIST : 12/22/75  
Recom. by NIST : 03/28/77

Summary: Brookhaven National Laboratory agreed to test the burner but advised on June 17, 1977, that they were unable to contact the inventor. An attorney representing the company stated in a letter dated November 10, 1977, that he wished to delay all actions until January 1978 pending resolution of patent related negotiations. On October 24, 1978, DOE advised inventor that support was terminated due to lack of response to repeated inquiries.

\*\*\*\*\*

DOE No: 0024 DOE Coord: G. K. Ellis

Title: Can and Bottle Crushing Apparatus

Description: The invention consists of a portable trailer-mounted device for crushing cans and bottles thereby increasing the density of the scrap, making handling more efficient.

Inventor: Drew W Morris  
Country :

Contact:  
Drew W Morris

Status: Complete Status Date: 05/07/81 OERI No.: 000819

Patent Status : Patent Applied For  
Development Stage : Production Engineering  
Technical Category: Industrial Processes

Recv by NIST : 03/22/76  
Recom. by NIST : 03/30/77  
Award Date : 05/07/80 Award Amount: \$ 35,000 Grant No: EC77-G-01-5090  
Contract Period: 05/07/80 - 05/07/81

Summary: A grant of \$35,000 was awarded to construct and operate five mobile can-and-bottle crushers, and assemble data on the machine's efficiency and reliability. No final report has been received. DOE unable to locate the inventor.

DOE No: 0025

DOE Coord: J.Aellen

Title: Sulfur Removal from Producer Gas-High Temperature

Description: The concept envisions the removal of hydrogen sulfide from a high temperature "reducing gas" stream using two scrubbing stages in series, a molten carbonate salt bath and a molten copper bath, each complete with a continuous regeneration cycle.

Inventor: Donald C Erickson  
State : MD

Contact:  
Donald C Erickson  
Energy Concepts Co.  
1704 South Harbor Lane  
Annapolis MD 21401  
301-266-6521

Status: Complete

Status Date: 07/09/83

OERI No.: 000002

Patent Status : Not Applied For  
Development Stage : Laboratory Test  
Technical Category: Industrial Processes

Recv by NIST : 05/07/75  
Recom. by NIST : 04/06/77  
Award Date : 07/09/81 Award Amount: \$ 91,032 Grant No: FG01-81CS15059  
Contract Period: 07/09/81 - 07/09/83

Summary: An award of \$91,032 was given to conduct a research program to establish the technical and economic feasibility of a hot fuel gas desulfurization. Inventor has been successful in generating \$4 million follow-on financing on this and DOE #3. This project has been completed.

\*\*\*\*\*

DOE No: 0026

DOE Coord: D. G. Mello

Title: Compact Energy Reservoir

Description: A room-heating convector which stores energy in eutectic salts and radiates the heat to the room under thermostatic control.

Inventor: Seymour Jarmul  
State : NY

Contact:  
Seymour Jarmul  
96 Windsor Gate  
North Hills NY 11040  
516-365-9886

Status: Complete

Status Date: 10/26/79

OERI No.: 000782

Patent Status : Not Applied For  
Development Stage : Prototype Test  
Technical Category: Miscellaneous

Recv by NIST : 03/17/76  
Recom. by NIST : 04/12/77  
Award Date : 08/02/78 Award Amount: \$ 20,740 Grant No: EU78-G016499  
Contract Period: 08/02/78 - 05/02/79

Summary: A grant of \$20,740 was awarded for a 9 month project. Inventor designed, constructed and functionally tested a prototype CER suitable for heating a 375 sq.ft. room in a well-insulated house similar to Solar One at the University of Delaware. DOE decided it was not necessary to subsequently subject the device to quantitative tests. A qualitative assessment was given to the inventor for his consideration.

DOE No: 0027 DOE Coord: D. G. Mello

Title: Waste Heat Utilization for Commercial Cooking Equipment

Description: Waste heat utilization for commercial cooking equipment to recover some of the energy in such a way as to avoid interaction with grease vapors.

Inventor: R J Jones  
State : CA

Contact:  
R J Jones  
2772 Salmon Drive  
Los Alamitos CA 90720  
213-721-2641

Status: Complete Status Date: 03/25/80 OERI No.: 001205

Patent Status : Patent # - 4084745  
Development Stage : Limited Production/Marketing  
Technical Category: Buildings, Structures & Components

Recv by NIST : 08/13/76  
Recom. by NIST : 04/14/77  
Award Date : 02/01/78 Award Amount: \$ 65,000 Grant No: EM78-G031852  
Contract Period: 02/01/78 - 03/25/80

Summary: A grant of \$65,000 for a 9 month project was awarded. Inventor fabricated two production-ready Hydrocoils: one for water, one for air. Calspan Corporation conducted a series of tests. Research facility of American Gas Association evaluated and provided a comprehensive engineering report. Results of Fall '78 AGA tests proved that unit operates as expected. At last report, inventor had sold three products. Technology is available for licensing.

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DOE No: 0028 DOE Coord: D. G. Mello

Title: Ultraflo

Description: Ultraflo, a hot water energy-saving system for buildings, is a water delivery system controlling temperature and flow by switches, low voltage current, and solenoid valves.

Inventor: Gilbert W Didion  
State : OH

Contact:  
Gilbert W Didion

Status: Other Assistance Status Date: 10/24/78 OERI No.: 000161

Patent Status : Patent # - 3668884  
Development Stage : Limited Production/Marketing  
Technical Category: Buildings, Structures & Components

Recv by NIST : 06/30/75  
Recom. by NIST : 04/27/77

Summary: The invention was tested in California under DOE mission program auspices. The same program provided the inventor with an opportunity for publicizing the technology in a marketing project in Denver in 1977. Inventor has obtained \$160,000 in private financing and an additional \$200,000 from Federal contracts. Product is now being marketed with limited success.

DOE No: 0029 DOE Coord: D. G. Mello

Title: Tuned Sphere Stable Ocean Platforms

Description: This invention presents a unique design approach for an ocean platform, by which the body's natural tendency to roll with wave excitation is diminished or offset.

Inventor: Kenneth E Mayo  
State : NH

Contact:  
Kenneth E Mayo  
Tuned Sphere Intl., Inc  
111 Lock Street  
Nashua NH 03060

Status: Complete Status Date: 02/06/79 OERI No.: 000800

Patent Status : Patent # - 3837308 and others  
Development Stage : Prototype Test  
Technical Category: Fossil Fuels

Recv by NIST : 12/18/75  
Recom. by NIST : 05/10/77  
Award Date : 09/30/77 Award Amount: \$ 90,000 Grant No: EF77-G-01-6175  
Contract Period: 09/30/77 - 06/30/78

Summary: An award was granted a study program to test vessel models, list pertinent parametric data, produce motion picture evidence of vessel stability, and provide reduced graphical data. Completion date was extended to August 1978, at no cost to allow for extension of tank tests and subsequent data reduction. Final report has been received and accepted. Company obtained an additional \$200,000 from R & D sales.

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DOE No: 0030 DOE Coord: G. K. Ellis

Title: Method of Removing Sulfur Dioxide from Flue Gases

Description: Embodies the scrubbing of flue gases with an aqueous solution of metal salt.

Inventor: Leopold Pessel  
State : PA

Contact:  
Ken Walmer  
AEL-EMTEC Corp.  
P.O. Box #507  
Lansdale PA 19446  
215-822-2929

Status: Complete Status Date: 03/01/83 OERI No.: 000482

Patent Status : Patent Applied For  
Development Stage : Laboratory Test  
Technical Category: Industrial Processes

Recv by NIST : 12/08/75  
Recom. by NIST : 05/17/77  
Award Date : 03/01/82 Award Amount: \$ 94,150 Grant No:  
Contract Period: 03/01/82 - 03/01/83

Summary: A grant awarded to 1) conduct a laboratory-scale testing program to further clarify the basic chemical reactions of the process in controlled but realistic environments, and 2) to provide background material for an economic analysis of the process. The results appear promising. Now, with the death of the inventor, technology is available for licensing or outright sale.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0031 DOE Coord: G.K.Ellis

Title: Ceramic Rotors and Vanes

Description: Technique for fabricating turbine rotors that will operate at high temperatures, thereby making it possible to operate at higher efficiencies.

Inventor: James C Withers  
State : VA

Contact:  
Richard E Engdahl  
Deposits and Composites, Inc.  
318 Victory Drive  
Herndon VA 22070  
703-471-9310

Status: Complete Status Date: 02/01/85 OERI No.: 000275

Patent Status : Not Applied For  
Development Stage : Engineering Design  
Technical Category: Combustion Engines & Components

Recv by NIST : 09/19/75  
Recom. by NIST : 05/24/77  
Award Date : 05/24/78 Award Amount: \$131,250 Grant No: FG01-85CE15214  
Contract Period: 05/24/78 - 02/01/85

Summary: A grant was awarded to conduct a research program designed to improve the material properties of his Chemical Vapor Deposition (CVD) material for use in energy-related applications. A variety of Chemical Vapor Deposition products are resulting. Entrepreneur is interested in licensing and/or forming and financing R & D limited partnerships. DOE inventions program is assisting by identifying financial resources.

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DOE No: 0032 DOE Coord: D.G.Mello

Title: Wood Gas Reactor

Description: The device produces a fuel gas from wood suitable for use in existing gas or oil-fired combustion equipment.

Inventor: Robert A Caughey  
State : NH

Contact:  
John C Calhoun, President  
Forest Fuels, Inc.  
P.O. Box #207  
Antrim NH 03440  
603-876-3353

Status: Complete Status Date: 03/16/81 OERI No.: 001174

Patent Status : Patent Applied For  
Development Stage : Prototype Development  
Technical Category: Fossil Fuels

Recv by NIST : 08/09/76  
Recom. by NIST : 05/26/77  
Award Date : 05/24/79 Award Amount: \$ 49,405 Grant No: FG01-79IR10171  
Contract Period: 05/24/79 - 03/16/81

Summary: A grant was awarded and completed, to design and build a gasifier system to produce gaseous fuel from biomass. The unit is being used to demonstrate the practical use of alternate fuels in existing industrial boiler installations, and is in demonstration service at Forest Fuel Technical Center in Antrim, NH. About 30 units sold as of Nov, 1982. The business is reported to be successful and employs twenty-five.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0033 DOE Coord: D. G. Mello

Title: Temperature Indicating Device

Description: Device to identify malfunction of steam trap.

Inventor: Joseph B Vogt  
State : MI

Contact:  
Joseph B Vogt  
5391 Ostrum Road  
Attica MI 48412  
313-724-0106

Status: Complete Status Date: 08/23/80 OERI No.: 000905

Patent Status : Patent Applied For  
Development Stage : Engineering Design  
Technical Category: Buildings, Structures & Components

Recv by NIST : 04/19/76  
Recom. by NIST : 05/31/77  
Award Date : 08/24/79 Award Amount: \$ 10,135 Grant No: FG01-79IR10272  
Contract Period: 08/24/79 - 08/23/80

Summary: A one year grant of \$10,135 was awarded to conduct an engineering development project to test and improve the operation of the inventor's temperature monitoring device. Inventor determined that there is no market for his product.

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DOE No: 0034 DOE Coord: P.M.Hayes

Title: Delphic Thermogenic Paint (Heat Film)

Description: A thin conductive paint containing crystalline graphite and pigments bonded to a surface such as Mylar with parallel bussbar connections to 120/220v AC to be used as radiant heating.

Inventor: Hal Ellis  
State : FL

Contact:  
Alex DeFonso  
Jerry Woolman  
4261 Howard Avenue  
Kensington MD 20795  
301-595-5252

Status: Complete Status Date: 03/31/83 OERI No.: 001588

Patent Status : Patent # - 3923697 and others  
Development Stage : Production & Marketing  
Technical Category: Buildings, Structures & Components

Recv by NIST : 11/11/76  
Recom. by NIST : 06/16/77  
Award Date : 09/30/82 Award Amount: \$ 25,000 Grant No: FG01-82CE15147  
Contract Period: 09/30/82 - 03/31/83

Summary: A grant of \$25,000 was awarded to verify the claim that radiant heating allows air temperature to be significantly lower than by convection heating, thus reducing building heat consumption with no loss in occupant comfort. The company developed new applications for the technology including thermal targets and decoys for the U S Air Force. Total product sales were \$4.1 million in 1986.

DOE No: 0035 DOE Coord: D. G. Mello

Title: Utilization of Solar Energy by Solar Pond System

Description: The proposal is for a solar pond demonstration plant.

Inventor: Gulab Chand Jain

Country : India

Contact:

Gulab Chand Jain

Status: No DOE Support

Status Date: 12/12/77

OERI No.: 000336

Patent Status : Not Applied For

Development Stage : Concept Development

Technical Category: Direct Solar

Recv by NIST : 10/23/75

Recom. by NIST : 06/23/77

Summary: Program has declined support of this invention because the inventor's proposal does not respond to several significant problems which are inherent in the system.

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DOE No: 0036 DOE Coord: D. G. Mello

Title: Computerstat

Description: Computerstat is a computerized thermostat set-back device that appears to be more energy-conserving than a conventional clock-thermostat.

Inventor: Richard P Gingras

State : CT

Contact:

Richard P Gingras

41 Kenoria Avenue

Danbury CT 06810

203-792-8877

Status: Complete

Status Date: 09/01/79

OERI No.: 001283

Patent Status : Patent Applied For

Development Stage : Engineering Design

Technical Category: Buildings, Structures & Components

Recv by NIST : 08/04/76

Recom. by NIST : 06/24/77

Award Date : 02/24/78 Award Amount: \$ 65,000 Grant No: EM78-G014208

Contract Period: 02/24/78 - 09/01/79

Summary: Program office awarded a grant of \$65,000 to build, test, and demonstrate the energy saving potential of a microprocessor controlled thermostat designed for use in residential and small commercial buildings. Grant also included the design of a computer program to simulate operation in a small commercial building. Company subsequently has gone bankrupt. Concept is now advertised by several companies.

DOE No: 0037

DOE Coord: G.K.Ellis

Title: Hotwater Engine

Description: The proposal is for the production of mechanical power from low grade heat.

Inventor: Lawrence E Bissell  
State : CAContact:  
Lawrence E Bissell

Status: No DOE Support

Status Date: 10/31/77

OERI No.: 000565

Patent Status : Patent Applied For  
Development Stage : Concept Development  
Technical Category: Miscellaneous

Recv by NIST : 01/02/76

Recom. by NIST : 08/05/77

Summary: The DOE program office recommended that the inventor be assisted by providing a specialized, highly sophisticated computer analysis of his device. ERIP requested a proposal to this effect, in October, 1977. To date there has been no response from the inventor indicating the type of device he would like tested, nor giving any specification or goals for the development.

\*\*\*\*\*

DOE No: 0038

DOE Coord: D. G. Mello

Title: Reduction Volatilizations

Description: The purpose of this invention is to produce volatile gases, liquids, and combustible coke, by passing pulverized coal through a eutectic molten metal bath of lead and sodium.

Inventor: John McCallum  
State : OHContact:  
John McCallum  
5926 Beechview Drive  
Worthington OH 43085  
614-885-8416

Status: Complete

Status Date: 07/01/79

OERI No.: 000558

Patent Status : Not Applied For  
Development Stage : Prototype Development  
Technical Category: Industrial Processes

Recv by NIST : 01/02/76

Recom. by NIST : 08/11/77

Award Date : 08/28/78 Award Amount: \$ 49,740 Grant No: EU78-G016594

Contract Period: 08/28/78 - 04/20/79

Summary: A grant of \$49,740 was awarded and completed for a 5 month experiment program to study chemical reactions of the process, measure all variables, outline plan for design of prototype plant and examine economic feasibility or large scale production. Ohio State University was the sub-contractor. Final report suggests that process is not economically feasible at this time.

DOE No: 0039

DOE Coord: G. K. Ellis

Title: Lawler Steam Generator and Lawler System of Thermal Oil Recovery

Description: A small, high pressure, high temperature, mobile steam generator which can be economically operated at an oil well installation.

Inventor: James H Lawler  
State : CA

Contact:  
James H Lawler

Status: No DOE Support

Status Date: 02/01/79

OERI No.: 000219

Patent Status : Patent # - 3543732  
Development Stage : Engineering Design  
Technical Category: Fossil Fuels

Recv by NIST : 08/29/75  
Recom. by NIST : 08/18/77

Summary: On Feb. 1, 1979, the inventor was advised that DOE would not support his invention as it represented no advance in the state-of-the-art, and because having sold his equipment, he no longer had it available for test.

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DOE No: 0040

DOE Coord: G. K. Ellis

Title: Improved Equipment and Process for Production of Blue Water Gas

Description: The main features of the invention are to use automatic valves for controlling the blue gas process, a square reactor bed with a rotating grate which will give positive ash removal -- all of which permits a faster cycling between the "run" and the "blow" of the process.

Inventor: Roland P Soule  
State : NY

Contact:  
Roland P Soule

Status: No DOE Support

Status Date: 06/12/81

OERI No.: 000734

Patent Status : Not Applied For  
Development Stage : Concept Development  
Technical Category: Other Natural Sources

Recv by NIST : 03/08/76  
Recom. by NIST : 08/18/77

Summary: No feasible method of DOE support could be identified. Various options were considered, and several tentative expressions of interest from others were made known to the inventor. He declined each of them. In his mid-eighties, he was not interested in personally pursuing the development. Nor was he interested in dealing with a small company. Also, he disagreed upon the need for establishing economic and technical feasibility.

DOE No: 0041 DOE Coord: D. G. Mello

Title: Fabrication of Photovoltaic Devices by Solid Phase Growth of Semi-conductors from Metal Layers

Description: The purpose of the invention is to provide a more efficient and economical process for fabricating solar cells.

Inventor: William F Armitage, Jr.  
State : MA

Contact:  
William F Armitage Jr

Status: No DOE Support Status Date: 11/07/78 OERI No.: 000580

Patent Status : Not Applied For  
Development Stage : Concept Development  
Technical Category: Direct Solar

Recv by NIST : 01/12/76  
Recom. by NIST : 08/30/77

Summary: Inventor failed to respond to repeated requests for a proposal.

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DOE No: 0042 DOE Coord: P.M.Hayes

Title: Flue Baffle Assembly

Description: The invention is a baffle device to be inserted in hot air passage of old, solid fuel-burning furnaces that have been converted to oil. The device increases heat transfer and reduces fuel gas temperature, thereby saving fuel.

Inventor: Everett Millard  
State : IL

Contact:  
Everett Millard  
4030 Irving Park Road  
Chicago IL 60641  
312-777-4030

Status: Complete Status Date: 09/08/80 OERI No.: 000347

Patent Status : Not Applied For  
Development Stage : Limited Production/Marketing  
Technical Category: Buildings, Structures & Components

Recv by NIST : 09/03/75  
Recom. by NIST : 09/23/77  
Award Date : 06/29/79 Award Amount: \$ 30,000 Grant No: FG01-79IR10277  
Contract Period: 06/29/79 - 09/08/80

Summary: A grant of \$30,000 was awarded and completed, to perform a six-task study and survey of existing coal fired heating systems that have been converted to oil and which may be modified profitably to accept the inventor's energy-saving flue baffle device. The survey failed to show a sufficient number of heating systems to warrant commercialization of the baffle. However, a secondary business developed as a result of the survey, in which the inventor measures flue gases that form the basis for optimizing air/fuel ratio to save energy.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0043 DOE Coord: J. Aellen

Title: Thermal Gradient Utilization Cycle

Description: The invention describes a new kind of power plant cycle using low grade, low temperature energy which does not need copious amounts of water for its operation.

Inventor: Sidney A Parker  
State : TX

Contact:  
Sidney A Parker  
5820 Diamond Oaks Dr., S  
Fort Worth TX 76117  
817-834-5081

Status: Complete Status Date: 08/04/80 OERI No.: 001263

Patent Status : Patent # - 3953971  
Development Stage : Limited Production/Marketing  
Technical Category: Other Natural Sources

Recv by NIST : 07/23/76  
Recom. by NIST : 09/30/77  
Award Date : 09/16/78 Award Amount: \$ 40,000 Grant No: EU78-C-01-6604  
Contract Period: 09/16/78 - 01/15/80

Summary: A grant of \$40,000 for one year was given to Mr. Parker, with support from Texas A&M, assessing the technical and economic feasibility of the thermal gradient utilization cycle when applied to selected energy conversion systems. Final report has been received. Inventor will make final report available to others in the trade and DOE.

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DOE No: 0044 DOE Coord: D.G.Mello

Title: New Working Fluids for Increasing the Cycle Efficiencies of Thermal

Description: The invention is a new type of absorption refrigerator.

Inventor: Leon Lazare  
State : CT

Contact:  
Leon Lazare  
81 Willow Street  
New Haven CT 06511  
203-776-0256

Status: Complete Status Date: 05/01/79 OERI No.: 001357

Patent Status : Not Applied For  
Development Stage : Engineering Design  
Technical Category: Miscellaneous

Recv by NIST : 08/24/76  
Recom. by NIST : 09/30/77  
Award Date : 05/16/78 Award Amount: \$ 75,000 Grant No: EU78-G-01-6317  
Contract Period: 05/16/78 - 05/01/79

Summary: A grant of \$75,000 was awarded to research a dual- solvent system for heat pump application, and to determine phase relationships and thermodynamic properties of certain specific three-component systems. Grant complete. Equipment failed to confirm theoretical predictions but yielded results which led to another invention which was subsequently funded by DOE.

DOE No: 0045 DOE Coord: D. G. Mello

Title: Bulk Cure Tobacco Barn with Improvements

Description: The tobacco curing barn is a trailer-like structure that is fitted with a roof-top solar collector, a recuperator formed by the double roof structure, and the entire structure well insulated on all external walls and floor.

Inventor: Joe W Fowler  
State : NC

Contact:  
Joe W Fowler  
Carolina Thermal Company  
Iron Works Road  
Route #2, Box #39  
Reidsville NC 27320  
919-342-0352

Status: Complete Status Date: 06/01/79 OERI No.: 001739

Patent Status : Patent Applied For  
Development Stage : Limited Production/Marketing  
Technical Category: Industrial Processes

Recv by NIST : 01/19/77  
Recom. by NIST : 09/20/77  
Award Date : 05/31/78 Award Amount: \$ 54,980 Grant No: EM78-G014254  
Contract Period: 05/31/78 - 06/01/79

Summary: A grant was awarded to manufacture, install on-site, and demonstrate a new type tobacco curing barn. Test data confirm this type barn yields significant energy savings compared to earlier designs and present industry standards. Final report has been received and accepted.

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DOE No: 0046 DOE Coord: G. K. Ellis

Title: Thexon Dehydration

Description: The process uses mechanical methods to reduce a liquid, containing the product to be dried, to a very fine spray of droplets, which are then carried to an air stream at ambient temperature, pressure and humidity such that surface evaporation causes crystallization.

Inventor: David J Secunda  
State : NJ

Contact:  
David J Secunda  
90 Prospect Hill Avenue  
Summit NJ 07901  
201-277-4475

Status: Complete Status Date: 08/01/80 OERI No.: 000679

Patent Status : Patent Applied For  
Development Stage : Laboratory Test  
Technical Category: Industrial Processes

Recv by NIST : 02/04/76  
Recom. by NIST : 09/23/77  
Award Date : 08/01/79 Award Amount: \$ 47,660 Grant No: FG01-79IR10023  
Contract Period: 08/01/79 - 08/01/80

Summary: A grant was awarded to contract with TRW to make exploratory holograms and do some limited analysis, to assess the nature of the phenomena. The work has been completed, and the phenomenon found to be evaporation, but which occurs at room temperature without the deliberate addition of any external heat. Inventor is not presently pursuing the development of this technology and would be interested in considering licensing opportunities.

DOE No: 0047 DOE Coord: G.K.Ellis

Title: Wastewater Aeration Power Control Device

Description: An on-line respirometer to measure the oxygen demand of microorganisms in waste water, and to regulate the power required for supplying the oxygen needed to keep the organisms alive.

Inventor: Robert M Arthur  
State : WI

Contact:  
Robert M Arthur  
548 Prairie Road  
Fond du Lac WI 54935  
414-922-6970

Status: Complete Status Date: 06/26/81 OERI No.: 001773

Patent Status : Patent # - 3740320 and others  
Development Stage : Engineering Design  
Technical Category: Industrial Processes

Recv by NIST : 02/07/77  
Recom. by NIST : 10/25/77  
Award Date : 06/26/80 Award Amount: \$ 58,200 Grant No: EU78-G-01-6418  
Contract Period: 06/26/80 - 06/26/81

Summary: A grant of \$58,200 was awarded and inventor was successful in developing a low-cost, less sophisticated model of an energy-saving on-line respirometer for use in wastewater treatment plants. Grantee has about \$2.5M out in proposals. Response has been slow from municipalities but good from industry. At last account, inventor was doing \$0.5 million/yr business; in 5-7 years, inventor estimates \$25 million.

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DOE No: 0048 DOE Coord: D. G. Mello

Title: Howald Combustor

Description: A fuel nozzle and chamber that pre-mixes air and fuel for more efficient, and less polluting combustion in aviation and automotive gas turbines.

Inventor: Werner E Howald  
State : OH

Contact:  
Werner E Howald

Status: No DOE Support Status Date: 02/08/79 OERI No.: 000197

Patent Status : Not Applied For  
Development Stage : Laboratory Test  
Technical Category: Combustion Engines & Components

Recv by NIST : 07/10/75  
Recom. by NIST : 11/09/77

Summary: MIT Innovation Center provided inventor with technical review and analysis of support possibilities. MIT determined that the combustor designs were engineering improvement, not patentable. The scale of laboratory testing required to develop jet-engine combustors is beyond the scope of this program and is not being pursued in any DOE laboratory. Inventor was referred to private consulting firm which specializes in combustor design.

DOE No: 0049 DOE Coord: D. G. Mello

Title: Automatic Control System for Water Heaters

Description: Invention is a valve to shut off water heater energy source, and to shut off cold water input in the event of a burst tank. It may also be applicable to solar systems.

Inventor: Wayne S Boals  
State : CA

Contact:  
Wayne S Boals

Status: No DOE Support Status Date: 09/01/78 OERI No.: 001192

Patent Status : Not Applied For  
Development Stage : Production Engineering  
Technical Category: Buildings, Structures & Components

Recv by NIST : 07/22/76  
Recom. by NIST : 10/31/77

Summary: DOE determined that the device offered little or no direct energy saving potential. A manufacturer of valves declined an offer of the technology citing marketing studies indicating poor sales potential. Program office stated that solar heating system application was ineffective as conservation device. Development of similar devices is now being pursued by others.

\*\*\*\*\*

DOE No: 0050 DOE Coord: P.M.Hayes

Title: Scotsman Fuel Energizer

Description: An accessory screen to atomize fuel in carbureted internal combustion engines.

Inventor: John T Benton  
State : IL

Contact:  
Robert Cameron  
Scotsman Automotive Corp.  
855 Sterling Avenue, Suite #8  
Palatine IL 60067  
312-991-5770

Status: Complete Status Date: 01/10/79 OERI No.: 000094

Patent Status : Patent # - 3934569  
Development Stage : Production & Marketing  
Technical Category: Combustion Engines & Components

Recv by NIST : 07/02/75  
Recom. by NIST : 11/23/77  
Award Date : 07/11/78 Award Amount: \$ 74,579 Grant No: FG01-78IR10102  
Contract Period: 07/11/78 - 01/10/79

Summary: A grant of \$74,579 was awarded to the grantee to determine the principles of operation and to measure overall fuel saving performance of the device. DOE determined, based upon the findings and conclusions of the Inspector General, the grant to be fraudulently obtained and that all funds must be returned to DOE. Grantee has been notified.

DOE No: 0051 DOE Coord: J.Aellen

Title: Thermal Efficiency Construction

Description: A method for building on energy-efficient residence, incorporating a counterflow heat exchanger, double- wall insulation, and other unique features. Copyright plans sold under license.

Inventor: Richard B Bentley  
State : NY

Contact:  
Richard B Bentley

Status: No DOE Support Status Date: 07/31/78 OERI No.: 001116

Patent Status : Not Applied For  
Development Stage : Concept Development  
Technical Category: Buildings, Structures & Components

Recv by NIST : 03/19/76  
Recom. by NIST : 12/20/77

Summary: In July '78 inventor advised DOE of his intention to prepare a proposal. Nothing has been received to date. Inventor reported he had applied for a grant under the Appropriate Technology Program. DOE support cannot be considered without a proposal from the inventor, or his or her agent.

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DOE No: 0052 DOE Coord: G. K. Ellis

Title: Air Wedge

Description: The device is an aerodynamic drag device for use with trucks, mounted on the front face of the trailer or the cargo box.

Inventor: Robert G Landry  
State : ME

Contact:  
Sherman R Jenney

Status: No DOE Support Status Date: 11/28/79 OERI No.: 000172

Patent Status : Patent # - 3740320  
Development Stage : Concept Development  
Technical Category: Transportation Systems, Vehicles & Components

Recv by NIST : 08/13/75  
Recom. by NIST : 12/21/77

Summary: On November 28, 1979, the inventor was advised that there is no basis for DOE support because there are devices already installed on trucks on the highway, which accomplish the same purpose.

DOE No: 0053

DOE Coord: G.K.Ellis

Title: High Efficiency Water Heater

Description: A direct contact, gas-fired hot water heater that can extract the latent heat of the water vapor formed during combustion.

Inventor: Harry E Wood  
State : LA

Contact:  
Harry E Wood  
6465 Oakland Drive  
New Orleans LA 70118  
504-488-7853

Status: Complete

Status Date: 03/01/79

OERI No.: 002070

Patent Status : Patent Applied For  
Development Stage : Prototype Development  
Technical Category: Buildings, Structures & Components

Recv by NIST : 04/15/77  
Recom. by NIST : 12/23/77  
Award Date : 03/01/78 Award Amount: \$ 72,600 Grant No: EM78-G-01-4255  
Contract Period: 03/01/78 - 03/01/79

Summary: A grant was awarded to install a direct contact gas fired hot water heater in a new 210-unit apartment building, and measure the system characteristics, efficiency and reliability. At last account, Kemco Co., Milwaukee, exclusive licensee, had sold 67 units (altogether saving 0.5 billion cu-ft gas/year), 48 in the last year, at \$30,000 each, with 30 more on order.

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DOE No: 0054

DOE Coord: D. G. Mello

Title: Optimizer

Description: A closed-loop electronic ignition for automobile engines. Spark advance is optimized for maximum power output, and minimum fuel consumption.

Inventor: Paul H Schweitzer  
State : PA

Contact:  
Edward Perry Sikes, Jr.  
Optimizer Control Corp.  
Suite #104, 201 Burnside Pkwy  
Burnsville MN 55337  
612-894-3610

Status: Complete

Status Date: 06/15/81

OERI No.: 001355

Patent Status : Patent # - 3974412 and others  
Development Stage : Working Model  
Technical Category: Combustion Engines & Components

Recv by NIST : 08/25/76  
Recom. by NIST : 01/11/78  
Award Date : 09/01/78 Award Amount: \$ 88,895 Grant No: EU78-G016602  
Contract Period: 09/01/78 - 06/18/81

Summary: A grant was awarded and completed to design, develop, fabricate and test a pilot model of the Optimizer. Pennsylvania State University sub-contracted electronic design tasks and analytical evaluation. Penn. State Univ. has been assigned greater role in development of instrumentation and additional test units. Final results showed insufficient improvement to warrant further development.

DOE No: 0055 DOE Coord: J.Aellen

Title: Electrically Heated Sucker-Rod

Description: An electric heater is the sucker rod used to drive a pump at the bottom of an oil well, intended to prevent paraffin from congealing and restricting flow, thus avoiding consequent costly maintenance cleanout.

Inventor: Richard D & Chester Palone  
State : ARContact:  
Richard D Palone

Status: No DOE Support Status Date: 12/29/80 OERI No.: 002523

Patent Status : Patent # - 3859503  
Development Stage : Concept Development  
Technical Category: Fossil Fuels

Recv by NIST : 07/22/77  
Recom. by NIST : 01/30/78

Summary: This invention received a favorable review within DOE. During the last contact with the inventor, he said he had located an interested subcontractor and would soon be submitting a proposal requesting a DOE grant. Then, on December 29th, 1980 he advised that he no longer needed a grant.

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DOE No: 0056 DOE Coord: G.K.Ellis

Title: Flexaflo-The Wet Fuel Dryer

Description: A dryer/boiler using sugar cane waste (bagasse) for fuel; exhaust gases from process are used to "pre- dry" fuel prior to entering boiler.

Inventor: William P Boulet  
State : LA

Contact:  
Jay Dornier  
Quality Industries  
P. O. Box #406  
Thibodaux LA 70301  
504-447-4021

Status: Complete Status Date: 12/29/80 OERI No.: 002238

Patent Status : Patent # - 3976018  
Development Stage : Prototype Test  
Technical Category: Industrial Processes

Recv by NIST : 05/24/77  
Recom. by NIST : 03/31/78  
Award Date : 12/29/79 Award Amount: \$111,220 Grant No: EU78-G-01-6593  
Contract Period: 12/29/79 - 12/29/80

Summary: A grant of \$111,220 was awarded to Quality Industries to modify design of existing bagasse dryer in sugar cane refinery to control airborne bagacillio to enable bagasse to replace oil-gas as alternate fuel for dryer. Results indeterminate due to poor industry economic conditions which tended to interfere with fair appraisal. Further testing needed to prove concept. Quality is interested in forming and financing R & D limited partnership in another industry with the same technology.

DOE No: 0057 DOE Coord: G.K.Ellis

Title: X-5 Smoke Eliminator

Description: A two-stage combustion chamber suitable for adapting existing incinerators to meet current EPA pollution requirement.

Inventor: Robert H Wieken  
State : MN

Contact:  
Robert H Wieken  
411 Betty Lane, West  
Saint Paul MN 55118  
612-457-8227

Status: Complete Status Date: 04/01/81 OERI No.: 000274

Patent Status : Patent # - 3812297  
Development Stage : Prototype Development  
Technical Category: Buildings, Structures & Components

Recv by NIST : 07/23/75  
Recom. by NIST : 03/31/78  
Award Date : 04/01/79 Award Amount: \$ 55,000 Grant No: FG01-79IR10097  
Contract Period: 04/01/79 - 04/01/81

Summary: A grant of \$55,000 was awarded for the grantee to convert the X-5 Smoke Eliminator from its existing use as a gas burner to the burning of all grades of fuel oil.

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DOE No: 0058 DOE Coord: D. G. Mello

Title: A Multiple Spark System Using Inductive Storage

Description: Multiple spark system using a gated series of spark discharges on a single plug, to improve the fuel economy of a spark-ignition engine, by reducing the misfire rate.

Inventor: Charles M Kirk  
State : FL

Contact:  
Charles M Kirk  
1965 Arrowhead Lane, NE  
Saint Petersburg FL 33703  
813-525-7878

Status: Complete Status Date: 02/26/79 OERI No.: 001922

Patent Status : Patent Applied For  
Development Stage : Prototype Test  
Technical Category: Transportation Systems, Vehicles & Components

Recv by NIST : 03/10/77  
Recom. by NIST : 03/31/78  
Award Date : 02/26/78 Award Amount: \$ 59,079 Grant No: FG01-78IR10025  
Contract Period: 02/26/78 - 02/26/79

Summary: A grant of \$59,079 was awarded to manufacture ten (10) prototype "MSS" units. Three units were installed on selected vehicles and dynamometer tested at University of Florida. ERIP assistance completed.

DOE No: 0059                      DOE Coord: G.K.Ellis

Title: The Volumetric Gas Turbine

Description:    A positive displacement, modified Brayton cycle engine, for use primarily in automobiles.

Inventor: Bernard Zimmern  
Country : France

Contact:  
Bernard Zimmern

Status: No DOE Support              Status Date: 09/24/82              OERI No.: 001680

Patent Status        : Not Applied For  
Development Stage : Concept Development  
Technical Category: Combustion Engines & Components

Recv by NIST        : 11/15/76  
Recom. by NIST      : 04/12/78

Summary:            The inventor was interested in a large grant in the vicinity of \$1 million, an amount greater than the program could justify or provide. The inventor was advised that no support would be forthcoming.

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DOE No: 0060                      DOE Coord: D. G. Mello

Title: Electric Transport Refrigerator

Description:    Prime mover engine of Refrigerated Truck is modified to function as an A.C. Generator as well as being an engine. Electricity produced, powers sealed refrigerator on trailer, replacing present diesel- powered refrigeration unit.

Inventor: William H Cone  
State     : IA

Contact:  
William H Cone  
Coneco, Inc.  
1151 Meadow Lane, A3  
Waterloo IA 50701  
319-233-8224

Status: Complete                      Status Date: 04/09/80              OERI No.: 001654

Patent Status        : Patent # - 3778651 and others  
Development Stage : Prototype Test  
Technical Category: Miscellaneous

Recv by NIST        : 12/13/76  
Recom. by NIST      : 04/28/78  
Award Date         : 09/25/78      Award Amount: \$ 50,000 Grant No: EU78-G016601  
Contract Period: 09/25/78    -    04/09/80

Summary:            A grant of \$50,000 was awarded for one-year design, development, and testing of invention. Iowa State University was sub-contractor for electronic design tasks. Inventor procured a diesel engine for test and modification. Grantee completed all tasks except in-service demonstration. Technical problems with invention design prevented performance of last task. Inventor plans to seek private funds for continuation of project.

DOE No: 0061 DOE Coord: D.G.Mello

Title: Fuel Preparation Process

Description: A method for separating mineral matter from coal using a flotation process.

Inventor: Willing B Foulke  
State : DE

Contact:  
Murry S. Laskey  
2401 Pennsylvania Avenue  
Suite #1010  
Wilmington DE 19806  
302-652-0115

Status: Complete Status Date: 06/17/83 OERI No.: 001088

Patent Status : Patent # - 3932145  
Development Stage : Concept Development  
Technical Category: Industrial Processes

Recv by NIST : 06/14/76  
Recom. by NIST : 04/26/78  
Award Date : 06/17/81 Award Amount: \$ 96,421 Grant No: FG01-81CS15041  
Contract Period: 06/17/81 - 06/14/82

Summary: A grant of \$96,421 was awarded for an experimental program on a laboratory scale basis with Research Triangle Institute as the contractor for the purpose of assessing the technical feasibility of the Foulke process. Grant complete, and the results appear promising. Inventor seeks licensing or other opportunities with industry.

\*\*\*\*\*

DOE No: 0062 DOE Coord: G.K.Ellis

Title: Tapered Plate Annular Matrix

Description: A compact heat tank exchanger that offers significant improvement over conventional shell-and- tank exchangers, especially for very high pressure applications.

Inventor: Thaddeus Papis  
State : CA

Contact:  
Thaddeus Papis  
10115 Victoria Avenue  
Riverside CA 92503  
714-687-0408

Status: Complete Status Date: 10/01/81 OERI No.: 001029

Patent Status : Not Applied For  
Development Stage : Production Engineering  
Technical Category: Miscellaneous

Recv by NIST : 05/28/76  
Recom. by NIST : 04/28/78  
Award Date : 07/22/79 Award Amount: \$ 79,800 Grant No: FG01-79IR10172  
Contract Period: 07/22/79 - 10/01/81

Summary: A grant of \$79,800 was awarded and completed for the inventor to analyze the potential uses, energy- related benefits, production techniques, and comparative economics of the heat exchanger. The study culminated in the definition of, and a plan for, a hardware demonstration program. The final report is being circulated among potential sources of private sector support for the hardware phase.

DOE No: 0063

DOE Coord: J.Aellen

Title: Fluorobulb

Description: Fluorescent bulb designed to directly replace an incandescent bulb. 20 watt bulb and ballast can be easily separated. Built on Edison screwbase.

Inventor: Thomas LoGiudice  
State : NY

Contact:  
Thomas LoGiudice  
520 East 72d Street  
New York NY 10021  
212-737-6703

Status: Complete

Status Date: 08/18/81

OERI No.: 001330

Patent Status : Patent # - 3953761  
Development Stage : Prototype Development  
Technical Category: Buildings, Structures & Components

Recv by NIST : 08/13/76  
Recom. by NIST : 05/03/78  
Award Date : 04/11/79 Award Amount: \$ 49,500 Grant No: FG01-79IR10093  
Contract Period: 04/11/79 - 08/01/81

Summary: A grant of \$49,500 was awarded and completed for research and product development. Grantee produced ten prototype bulbs, investigated problems of uniform coating, and produced certified data regarding lamp efficiency, luminous efficiency and accurate cost data for predicting production quantity costs. Data suggests that lamp is not likely to be manufactured at a competitive price.

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DOE No: 0064

DOE Coord: G. K. Ellis

Title: The Mahalla Process--A Hydrometallurgical Method for Extracting Copper

Description: A hydrometallurgical process for refining copper that eliminates the electrofining step.

Inventor: Shalom Mahalla  
State : AZ

Contact:  
Lester Hendrickson  
Arizona State U.  
School of Engineering  
Tempe AZ 85281  
602-965-3764

Status: Complete

Status Date: 09/01/79

OERI No.: 002543

Patent Status : Patent Applied For  
Development Stage : Laboratory Test  
Technical Category: Industrial Processes

Recv by NIST : 08/01/77  
Recom. by NIST : 05/08/78  
Award Date : 09/01/78 Award Amount: \$ 88,933 Grant No:  
Contract Period: 09/01/78 - 09/01/79

Summary: A grant of \$88,933 was awarded and the work completed, to develop and optimize the process variables on a laboratory scale. With the copper industry depressed, the technology is being adapted for industrial toxic waste recovery. At last account, Hendrickson sought \$500,000 to build a pilot plant having enough flexibility to be adaptable to the processing of feed sources from various industrial plant wastes.

DOE No: 0065

DOE Coord: J.Aellen

Title: WattVendor

Description: A coin operated device for dispensing electricity.

Inventor: Lee A Henningsen  
State : PAContact:  
Lee A Henningsen  
Firetrol, Inc.  
1617 Cascade Street  
Erie PA 16502  
814-459-1770

Status: Complete

Status Date: 09/10/79

OERI No.: 000741

Patent Status : Not Applied For  
Development Stage : Prototype Test  
Technical Category: Miscellaneous

Recv by NIST : 02/18/76

Recom. by NIST : 05/12/78

Award Date : 09/14/79 Award Amount: \$ 55,800 Grant No: FG01-79IR10266

Contract Period: 09/14/79 - 12/31/80

Summary: A grant of \$55,800 was awarded and completed, to manufacture and install sufficient units to completely convert Hillman Ferry Campground (TVA operated) from free to metered electric service. TVA will record user reactions, electric usage before and after, and operate units in one year demonstration program.

\*\*\*\*\*

DOE No: 0066

DOE Coord: D.G.Mello

Title: Heat Extractor

Description: A system for recovering "Waste Heat" from industrial combustion processes by using water in direct contact with combustion products and an auxiliary heat exchanger.

Inventor: Philip Zacuto  
State : NYContact:  
Daniel Ben-Shmuel  
Heat Extractor Corporation  
P.O. Box #455  
Johnstown NY 12095  
518-568-2288

Status: Complete

Status Date: 09/29/78

OERI No.: 002277

Patent Status : Not Applied For  
Development Stage : Prototype Test  
Technical Category: Industrial Processes

Recv by NIST : 06/20/77

Recom. by NIST : 05/26/78

Award Date : 09/29/78 Award Amount: \$125,000 Grant No: EU78-G016677

Contract Period: 09/29/78 - 09/29/79

Summary: A grant of \$125,000 was awarded and completed to install, operate and test, a heat extractor in an operating paper mill with Mohawk Paper Mills, Inc. Included were funds to adapt the heat extractor for coal-fired boilers. The work is complete. Results confirm significant fuel savings. As of January, 1985, inventor had sold the industrial unit to a Pittsburgh firm and the residential one to Armitron. The unit is re-engineered and being marketed through Heat Extractor, Inc., Melrose, MA (800-633-3324)

DOE No: 0067

DOE Coord: G. K. Ellis

Title: Windmill Using Hydraulic System for Energy Transfer and Speed Control

Description: A windmill design based on a hydraulic system for wind energy, particularly suited for low to medium speed winds.

Inventor: James A Browning  
State : NH

Contact:  
James A Browning  
Browning Engineering Corp.  
P.O. Box #863  
Hanover NH 03755  
603-298-8400

Status: Complete

Status Date: 12/01/84

OERI No.: 000799

Patent Status : Patent Applied For  
Development Stage : Prototype Development  
Technical Category: Other Natural Sources

Recv by NIST : 02/05/76

Recom. by NIST : 06/20/78

Award Date : 12/07/79 Award Amount: \$ 39,000 Grant No: FG01-80IR10320

Contract Period: 12/07/79 - 12/01/84

Summary: A grant of \$39,000 was awarded to complete the construction of the grantee's 70-ft diameter hydraulic windmill, and then to test it. Accidents and delays in receipt of materials have delayed the project.

\*\*\*\*\*

DOE No: 0068

DOE Coord: D.G.Mello

Title: Under Compression and Over Compression Free Helical Screw Rotary Compressor

Description: A compressor for use in medium-to-large sized heat pump-air conditioning systems.

Inventor: Leroy M Bissett  
State : VA

Contact:  
Charlie Baziell

Status: Other Assistance

Status Date: 10/01/79

OERI No.: 000631

Patent Status : Patent # - 3936239  
Development Stage : Prototype Development  
Technical Category: Buildings, Structures & Components

Recv by NIST : 01/22/76

Recom. by NIST : 06/28/78

Summary: As a result of the NIST recommendation and in consideration of an unsolicited proposal from the grantee, the CE program within DOE funded a \$300,000 two-year contract, which has now been completed. Results show good energy savings, but further work is required to develop a commercial prototype of a marketable size.

DOE No: 0069

DOE Coord: G. K. Ellis

Title: Ionic Fuel Control System for the Internal Combustion Engine

Description: A system for controlling the air-fuel ratio of a gasoline internal combustion engine to maintain lean operation, improved fuel economy, and good performance.

Inventor: Enoch J Durbin  
State : NJ

Contact:  
Enoch J Durbin  
Instrumentation & Control Lab.  
Aero Lab., Forrestal Campus  
Princeton University  
Princeton NJ 08540  
609-452-5154

Status: Complete

Status Date: 07/01/80

OERI No.: 000844

Patent Status : Patent # - 3470741  
Development Stage : Prototype Development  
Technical Category: Combustion Engines & Components

Recv by NIST : 03/25/76  
Recom. by NIST : 06/29/78  
Award Date : 07/01/79 Award Amount: \$ 87,051 Grant No: FG01-79IR10022  
Contract Period: 07/01/79 - 07/01/80

Summary: A grant was awarded to develop the Ionic Fuel Control System and to assess its commercial feasibility. A successful prototype was developed. Despite much work, the inventor's only success with an automotive company was Chrysler's successful bid on a military contract which incorporated the technology. Adaptation of the device gives wind action in three directions, which could also be critical in determining velocities of STOL aircraft.  
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DOE No: 0070

DOE Coord: J. Aellen

Title: Air Cooled Compressor Heat Recovery and Heat Circulation System plus Ambient Air Filter and Air Cleaner

Description: A heat recovery system for large compressors.

Inventor: Kenneth A Stofen  
State : WI

Contact:  
Kenneth A Stofen  
3642 Country Lane  
Racine WI 53405  
414-554-7987

Status: Complete

Status Date: 08/08/80

OERI No.: 002847

Patent Status : Patent Applied For  
Development Stage : Limited Production/Marketing  
Technical Category: Miscellaneous

Recv by NIST : 10/21/77  
Recom. by NIST : 06/28/78  
Award Date : / / Award Amount: \$ 53,000 Grant No: FG01-79IR10026  
Contract Period: / / - / /

Summary: A grant was awarded to design and build ecology cabinets; and then assemble, operate, and test air cooled compressor systems in environments with particulate-laden and high temperature air. Sold 31 units to various size companies. Expanding his product to include 5 through 2000 HP compressors. Secured GSA contract two years in a row. A new company named Air Systems Inc at 937 Hays Ave., Racine, WI 53405 has been formed to build the units. Trying to expand market through more distributors.

DOE No: 0071 DOE Coord: D. G. Mello

Title: Knight Guard

Description: A system for remote controlling the lighting in a building by means of low frequency radio signals.

Inventor: Arleigh Wangler  
State : CA

Contact:  
Arleigh Wangler

Status: No DOE Support Status Date: 09/01/78 OERI No.: 002538

Patent Status : Patent Applied For  
Development Stage : Limited Production/Marketing  
Technical Category: Buildings, Structures & Components

Recv by NIST : 08/10/77  
Recom. by NIST : 06/29/78

Summary: Inventor is investigating law enforcement agencies' interest.

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DOE No: 0072 DOE Coord: G. K. Ellis

Title: Utilization of Waste Gas for Boilers and Furnaces in Refineries and Petrochemical Plants

Description: System exploits the relationship between specific gravity of the flare gas and its BTU content, to compute BTU per hour and subsequently control the fuel-air ratio of boilers.

Inventor: Joe Agar  
State : TX

Contact:  
Basil W Balls

Status: No DOE Support Status Date: 08/08/80 OERI No.: 000733

Patent Status : Not Applied For  
Development Stage : Laboratory Test  
Technical Category: Industrial Processes

Recv by NIST : 03/08/76  
Recom. by NIST : 06/28/78

Summary: A procurement request for a grant was initiated on April 20, 1979. Shortly thereafter, Mr. Agar sold the company and the new manager indicated that the earlier proposal was not in accord with the company's new goals. Then, on Dec 28 1979, the company advised by telephone that they were not interested in pursuing the development at all, since it did not coincide with their company's new goals. Formal notification was received in an August 5, 1980 letter.

DOE No: 0073 DOE Coord: G. K. Ellis

Title: INTECH

Description: A system which uses light-weight aggregate insulation to provide the form-work for the concrete structural members of a building, with pre-finished exterior and interior surfaces.

Inventor: Melvin H Sachs  
State : MI

Contact:  
Melvin H Sachs  
ISTECH, INC  
29200 Vassar Ave., Suite #700  
Livonia MI 48152  
313-478-0606

Status: Complete Status Date: 06/22/79 OERI No.: 001323

Patent Status : Patent # - 3800015 and others  
Development Stage : Production & Marketing  
Technical Category: Buildings, Structures & Components

Recv by NIST : 08/09/76  
Recom. by NIST : 08/10/78  
Award Date : 06/22/78 Award Amount: \$ 87,230 Grant No:  
Contract Period: 06/22/78 - 06/22/79

Summary: A grant was awarded to contract with Underwriters Laboratories, Inc. to perform fire tests, and to contract with Lev Zetlin Consultants for structural testing and analysis. The inventor as looking for private sector money to design machinery for mass production. Some designs have been sold and built.

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DOE No: 0074 DOE Coord: D. G. Mello

Title: A Solid Electrolyte Galvanic Solar Energy Conversion Cell

Description: A high-temperature, high voltage (1.51V) fuel cell utilizing a unique calcium stabilized zirconia solid electrolyte. Device promises high efficiency, minimum environmental problems and wide application. It can also simultaneously produce chemical feedstock.

Inventor: G R Fitterer  
State : PA

Contact:  
G. R. Fitterer, President  
Scientific Applications, Inc.  
825 Twelfth Street  
Oakmont PA 15139  
412-828-0233

Status: Complete Status Date: 10/30/80 OERI No.: 002560

Patent Status : Patent Applied For  
Development Stage : Limited Production/Marketing  
Technical Category: Direct Solar

Recv by NIST : 09/19/77  
Recom. by NIST : 08/29/78  
Award Date : 08/24/79 Award Amount: \$ 50,000 Grant No: FG01-79IR10264  
Contract Period: 08/24/79 - 10/30/80

Summary: A grant of \$50,000 was awarded to conduct a two-part research project to investigate the characteristics of his Fuel Cell. Part one is a study of the primary cell and its voltage characteristics. Part two is research leading to selection of the best electrolyte. Results indicate that although workable, advantages over existing fuel cells are not significant.

DOE No: 0075 DOE Coord: G.K. Ellis

Title: Coke Quenching Steam Generator

Description: The steam generator is a direct contact heat exchanger for generation of process steam from hot coke. Objective: to build new coke ovens.

Inventor: Richard Jablin  
State : NC

Contact:  
Richard Jablin  
2511 Woodrow Street  
Durham NC 27705  
919-286-4693

Status: Complete Status Date: 06/03/82 OERI No.: 002265

Patent Status : Patent Applied For  
Development Stage : Laboratory Test  
Technical Category: Industrial Processes

Recv by NIST : 06/06/77  
Recom. by NIST : 08/29/78  
Award Date : 05/14/79 Award Amount: \$119,400 Grant No: FG01-79IR10212  
Contract Period: 05/14/79 - 06/03/82

Summary: A grant of \$119,400 was awarded to complete a program of laboratory and pilot plant scale development. The work was successful, with steam quality adequate for process steam, and coke quality superior to the only competing process. Inventor seeks limited partnership arrangement, and anticipates a \$10 million/year business.

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DOE No: 0076 DOE Coord: G.K.Ellis

Title: The Ross Furnace

Description: A new gas burner design for use in high temperature industrial process furnace.

Inventor: Donald R Ross  
State : TX

Contact:  
Donald R Ross  
3344 South Grove  
Fort Worth TX 76110  
817-921-9671

Status: Complete Status Date: 05/05/81 OERI No.: 002075

Patent Status : Patent Applied For  
Development Stage : Prototype Test  
Technical Category: Industrial Processes

Recv by NIST : 04/18/77  
Recom. by NIST : 09/18/78  
Award Date : 05/05/80 Award Amount: \$ 82,000 Grant No:  
Contract Period: 05/05/80 - 05/05/81

Summary: A grant of \$82,000 was awarded to build, assemble, operate and test two systems; one for a tilted furnace and one for a rotary furnace. The work was completed satisfactorily.

DOE No: 0077 DOE Coord: J. Aellen

Title: Variable Heat Refrigeration System

Description: An improved vapor degreasing system incorporating a heat pump to conserve energy, retain solvents, and reduce hazards associated with solvent vapors.

Inventor: James W McCord  
State : KY

Contact:  
James W McCord  
Corpane Industries, Inc.  
250 Production Court  
Bluegrass Industrial Park  
Louisville KY 40299  
502-491-4433

Status: Complete Status Date: 09/23/80 OERI No.: 001173

Patent Status : Patent Applied For  
Development Stage : Working Model  
Technical Category: Miscellaneous

Recv by NIST : 08/09/76  
Recom. by NIST : 09/25/78  
Award Date : 09/23/80 Award Amount: \$ 97,400 Grant No: FG01-80CS15026  
Contract Period: 09/23/80 - 06/01/82

Summary: An award of \$97,400 was granted to design and construct demonstration models of the variable heat refrigeration system.

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DOE No: 0078 DOE Coord: G. K. Ellis

Title: System for High Efficiency Power Generation from Low Temperature Sources

Description: Concept for reducing the heat sink temperature in power plant operation and other applications; ice would be generated during cold weather and used to reduce the heat sink temperature during warmer weather.

Inventor: Robert McNeill  
State : CA

Contact:  
Robert McNeill

Status: No DOE Support Status Date: 03/11/81 OERI No.: 001154

Patent Status : Not Applied For  
Development Stage : Concept Development  
Technical Category: Other Natural Sources

Recv by NIST : 06/30/76  
Recom. by NIST : 09/28/78

Summary: Inventor advised DOE that he is no longer interested in pursuing the invention because of other interests.

DOE No: 0079

DOE Coord: G. K. Ellis

Title: Oil Well Bit Insert (Tooth), Cutting Article, Ablative

Description: A new composite bit insert to replace the tungsten carbide inserts now commonly used in the rotary cone cutter bits for oil and gas well drillings. It is claimed to have sharper edges, more resistant to wear, and to be stronger.

Inventor: Marvin L Wahrman  
State : CA

Contact:  
Marvin L Wahrman  
47 Red Rock  
Irvine CA 92714  
714-979-1280

Status: Complete

Status Date: 01/29/81

OERI No.: 001732

Patent Status : Patent Applied For  
Development Stage : Prototype Test  
Technical Category: Fossil Fuels

Recv by NIST : 01/21/77  
Recom. by NIST : 08/25/78  
Award Date : 01/29/80 Award Amount: \$ 57,150 Grant No: FG01-79IR10288  
Contract Period: 01/29/80 - 01/29/81

Summary: A grant of \$57,150 was awarded to prove the technical feasibility and to address the repeatability and controllability of the manufacturing process for these bits. A bit was developed which cuts 3-4 times faster and lasts longer than conventional ones. At last account, company had 4 employees and had expanded to produce saw blades.

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DOE No: 0080

DOE Coord: J.Aellen

Title: Improved Unfired Refractory Brick

Description: Chemically bonded, unfired brick for ladles handling molten steel, consisting of 90% silica and containing 10% clay with minor amounts of hardening agent and Gulac.

Inventor: Patsie C Campana  
State : OH

Contact:  
Patsie C Campana

Status: No DOE Support

Status Date: 03/23/82

OERI No.: 001964

Patent Status : Not Applied For  
Development Stage : Limited Production/Marketing  
Technical Category: Industrial Processes

Recv by NIST : 03/18/77  
Recom. by NIST : 09/28/78

Summary: A proposal has been received from the inventor for several million dollars to build a production facility. The inventor was advised the program was unable to fund capital equipment, and potential alternatives of business plan and marketing study were described. The inventor has indicated no interest except on the basis of a large grant for capital equipment.

DOE No: 0081 DOE Coord: D. G. Mello

Title: Flash Polymerization

Description: A process utilizing pulsed xenon arc discharge lamps for polymerizing thermosetting resins.

Inventor: C Richard Panico  
State : MA

Contact:  
C Richard Panico  
Xenon Corporation  
66 Industrial Way  
Wilmington MA 01887  
617-658-8940

Status: Complete Status Date: 02/03/81 OERI No.: 002526

Patent Status : Patent # - 3782889  
Development Stage : Prototype Test  
Technical Category: Industrial Processes

Recv by NIST : 07/26/77  
Recom. by NIST : 09/29/78  
Award Date : 09/29/79 Award Amount: \$ 99,990 Grant No: FG01-79IR1030  
Contract Period: 09/29/79 - 02/02/81

Summary: A grant of \$99,990 was awarded and completed, to conduct a 3-part investigation of the energy-saving and market penetration potential for this curing machine. A \$500,000 contract for automotive parts curing was captured as a result of DOE- supported Development work. Several venture capitalists have expressed considerable interest. Sale of the company has been discussed.

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DOE No: 0082 DOE Coord: D. G. Mello

Title: Cool Air Induction

Description: Modification kit for engines used for powering irrigation pumps. Uses cool well water in air cooler placed between commercial supercharger and the engine.

Inventor: Robert L Ullrich  
State : NM

Contact:  
Robert L Ullrich  
Ullrich Eng. & Mfg., Inc.  
1717 East Second Street  
Roswell NM 88201  
505-662-1821

Status: Complete Status Date: 09/24/79 OERI No.: 003061

Patent Status : Not Applied For  
Development Stage : Limited Production/Marketing  
Technical Category: Industrial Processes

Recv by NIST : 11/23/77  
Recom. by NIST : 10/27/78  
Award Date : 09/24/79 Award Amount: \$ 68,402 Grant No: FG01-79IR10284  
Contract Period: 09/24/79 - 04/30/80

Summary: A grant was awarded for analysis of existing operating data, a survey of the potential market, development and comparison of alternate strategies and a preparation of a formal business plan. Product is available for licensing.

DOE No: 0083

DOE Coord: P.M.Hayes

Title: Vertical Solar Louvers

Description: Massive rectangular columns oriented in NE-SW direction, located indoors behind a glazed southern exposure. Aesthetic improvement over conventional TROMBE wall should lead to increased acceptance of passive solar heating.

Inventor: Charles James Bier  
State : VA

Contact:  
Charles James Bier  
Route #2, Box #35  
Ferrum VA 24088

Status: Complete

Status Date: 02/28/84

OERI No.: 002821

Patent Status : Not Applied For  
Development Stage : Concept Development  
Technical Category: Buildings, Structures & Components

Recv by NIST : 10/17/77  
Recom. by NIST : 10/27/78  
Award Date : 08/31/82 Award Amount: \$ 26,510 Grant No: FG01-82CE15135  
Contract Period: 08/31/82 - 02/28/84

Summary: A grant of \$26,510 was awarded for inventor to prepare test plan, instrumentation strategy, and computer design guide. Final report was delivered September 30th, 1984. Results will be published in several semi-technical journals to encourage the passive solar concept.

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DOE No: 0084

DOE Coord: G.K.Ellis

Title: Kinetic Energy Type Pumping System

Description: Simplified pumping system utilizes the kinetic energy of a circulating fluid to reduce the bottom-hole pressure and to lift the down-hole fluid.

Inventor: Kenneth W Odil  
State : TX

Contact:  
Kenneth W Odil

Status: No DOE Support

Status Date: 09/24/82

OERI No.: 002032

Patent Status : Patent # - 3123009  
Development Stage : Prototype Test  
Technical Category: Industrial Processes

Recv by NIST : 04/11/77  
Recom. by NIST : 10/30/78

Summary: A proposal was received from the inventor which was unacceptable because it was considerably beyond the level of support funds that could be justified. The inventor then endeavored to find a cost sharing arrangement with an interested private industry. A 5/13/82 check with him indicated that due to other business interests, Mr. Odil temporarily at least, is not interested in pursuing his invention.

DOE No: 0085 DOE Coord: D.G.Mello

Title: Dielectric Windowshade

Description: A method by which an applied voltage causes a reflective aluminized mylar film to unroll and press flat against a window.

Inventor: Charles G Kalt  
State : MAContact:  
Charles G Kalt  
29 Hawthorne Road  
Williamstown MA 01267  
413-664-6371

Status: Complete Status Date: 08/18/81 OERI No.: 003691

Patent Status : Patent # - 3989357  
Development Stage : Concept Development  
Technical Category: Buildings, Structures & ComponentsRecv by NIST : 04/12/78  
Recom. by NIST : 10/31/78  
Award Date : 08/18/81 Award Amount: \$ 99,500 Grant No: FG01-81CS15076  
Contract Period: 08/18/81 - 11/18/82Summary: A grant of \$99,500 was awarded and completed, to design, build and test, a demonstration model of the Dielectric Windowshade. A unique product resulted. Test-marketing for commercial greenhouses has been completed.  
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DOE No: 0086 DOE Coord: G. K. Ellis

Title: Coke Desulfurization

Description: Method to remove sulfur from high sulfur coal during the coking process, which makes it possible to use high sulfur coals in the manufacture of metallurgical coke. Process can pay for itself with the sulfur by-product.

Inventor: Douglas MacGregor  
State : UTContact:  
Howard Bovars  
Diamond Energy Corporation  
1012 North Beck Street  
Sale Lake City UT 84103  
801-359-3718

Status: Complete Status Date: 03/23/81 OERI No.: 002726

Patent Status : Patent # - 4011303  
Development Stage : Laboratory Test  
Technical Category: Fossil FuelsRecv by NIST : 09/21/77  
Recom. by NIST : 11/27/78  
Award Date : 12/07/79 Award Amount: \$ 82,500 Grant No: FG01-80IR10305  
Contract Period: 12/07/79 - 09/30/81

Summary: A grant of \$82,500 was awarded for Diamond West Corporation, exclusive licensee, to perform sufficient additional technical, engineering and application investigation, to ready the technology for the marketplace. Licensee, with the help of the inventor, unable to duplicate results of initial experiment. But, Diamond West took a new approach and developed a successful process. \$1.5 million private monies invested to date, and doubling that is anticipated. At last account, Diamond West had tentative plans for joint venture to build a calciner for sale to coke industry.

DOE No: 0087 DOE Coord: J. Aellen

Title: Recovering Uranium From Coal in Situ

Description: A method for recovering uranium from the sites of depleted coal desposits that have been mined by in situ gasification.

Inventor: Ruel Carlton Terry  
State : OK

Contact:  
Ruel Carlton Terry  
2235 Northwest 55th Street  
Oklahoma City OK 73112  
405-840-9586

Status: Complete Status Date: 02/06/80 OERI No.: 002224

Patent Status : Patent # - 4113313  
Development Stage : Laboratory Test  
Technical Category: Industrial Processes

Recv by NIST : 05/17/77  
Recom. by NIST : 11/29/78  
Award Date : 02/01/80 Award Amount: \$ 85,240 Grant No: FG01-80IR10301  
Contract Period: 02/01/80 - 08/01/81

Summary: A grant of \$85,240 was awarded to reduce two of the uncertainties related to eventual commercialization of the process. The first uncertainty concerns potential sites and the second uncertainty relates to technical feasibility. DOE Livermore Lab believes this method has good commercial possibilities, but uranium price must rise to make it commercially feasible.

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DOE No: 0088 DOE Coord: D. G. Mello

Title: System-100

Description: A strategy (control system) for regulating centrifugal and reciprocating equipment used in natural gas compressor stations.

Inventor: Alex Rutshein, et al  
State : IA

Contact:  
Lawrence Ladin  
c/o Compressor Controls Corp.  
P. O. Box #1936  
Des Moines IA 50306  
515-244-1180

Status: Complete Status Date: 08/12/80 OERI No.: 001818

Patent Status : Patent Applied For  
Development Stage : Concept Development  
Technical Category: Fossil Fuels

Recv by NIST : 02/10/77  
Recom. by NIST : 11/30/78  
Award Date : 08/26/80 Award Amount: \$ 50,000 Grant No: FG01-80CS15012  
Contract Period: 08/26/80 - 08/15/81

Summary: A grant of \$50,000 was awarded to develop a microprocessor- based strategy control system for control of compressors in gas transmission pipelines. Two pipelines have purchased product. Potential is easily \$1 million annual savings. Product has gone on to win industry award for significant invention.

DOE No: 0089

DOE Coord: D.G.Mello

Title: Continuous Casting Process and Apparatus

Description: A continuous horizontal casting process for steel billets, slabs, and tubing, which achieves a very high quality product at twice the speed of existing continuous casting processes.

Inventor: Henry E Allen  
State : CT

Contact:  
Henry E Allen  
Techmet Corporation  
Fifteen Valley Drive  
Greenwich CT 06830  
203-629-4633

Status: Complete

Status Date: 07/31/84

OERI No.: 002648

Patent Status : Patent # - 3517725  
Development Stage : Prototype Development  
Technical Category: Industrial Processes

Recv by NIST : 08/22/77  
Recom. by NIST : 11/30/78  
Award Date : 07/29/82 Award Amount: \$115,000 Grant No: FG01-82CE15101  
Contract Period: 07/29/82 - 07/31/84

Summary: A grant of \$115,000 was awarded to build and test a device for continuous casting of 4-inch bars of steel. The work on this project is complete. The project was generally successful. Lack of interest due to unfavorable economic conditions in steel industry however, prevents its commercialization.

\*\*\*\*\*

DOE No: 0090

DOE Coord: J.Aellen

Title: Grain Dryer

Description: A device to be added to a grain combine, to utilize the exhaust energy from the combine engine for drying the grain in the combine hopper tank.

Inventor: Clinton Van Winkle  
State : NE

Contact:  
Clinton Van Winkle

Status: No DOE Support

Status Date: / /

OERI No.: 003790

Patent Status : Patent # - 4003139  
Development Stage : Prototype Development  
Technical Category: Industrial Processes

Recv by NIST : 03/16/78  
Recom. by NIST : 12/18/78

Summary: Inventor not responsive. No basis for consideration of DOE grant support.

DOE No: 0091 DOE Coord: D.G.Mello

Title: Mine Brattice

Description: A reusable brattice for use in coal mining. Quick, and inexpensive to install - seals better than present stoppings. Improved air seal saves power and improves safety.

Inventor: James Allen Bagby  
State : KY

Contact:  
Rees Kinney, Atty.  
Bagby Brattices, Inc.  
P.O. Box #569  
Greenville KY 42345  
502-338-5619

Status: Complete Status Date: 09/20/79 OERI No.: 003210

Patent Status : Patent # - 3972272  
Development Stage : Prototype Development  
Technical Category: Fossil Fuels

Recv by NIST : 12/20/77  
Recom. by NIST : 12/19/78  
Award Date : 09/29/79 Award Amount: \$ 62,664 Grant No: FG01-79IR10302  
Contract Period: 09/29/79 - 05/25/83

Summary: A grant of \$62,664 was awarded and completed to fabricate 25 prototype brattices and install them in Peabody Coal underground coal mine in Southern Illinois. Data were collected and possibly detrimental effects of natural subsidence on the performances of the brattices was measured and found to be minimal. Product advanced rapidly, with sales organization formed and 1982 sales of \$150,000. Product is accepted in the mining industries and is available for distribution. Corporation has doubled sales.

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DOE No: 0092 DOE Coord: G.K.Ellis

Title: Tri-Water, A Combination Air Conditioning and Fire Protection System for a Building.

Description: Utilizes common plumbing system with water serving as heat source/sink for heat pumps as well as sprinkler system.

Inventor: John L Carroll  
State : KY

Contact:  
Roger Stamper

Status: No DOE Support Status Date: 07/15/86 OERI No.: 001160

Patent Status : Patent # - 3939914  
Development Stage : Limited Production/Marketing  
Technical Category: Buildings, Structures & Components

Recv by NIST : 03/22/76  
Recom. by NIST : 12/28/78

Summary: Inventor has licensed the technology to American Air Filter Co Inc. A grant was declined on the belief that it would compromise the inventor's patent position. At last account, American Air had installed \$22 million of the technology, including \$2 million for equipment and \$20 million for construction, representing 36 jobs. Another 30 were on the drawing board.

DOE No: 0093

DOE Coord: G.K.Ellis

Title: Shelander-Burrows Process for Recovery of Metallic Values from Smelter Emissions

Description: A solution/precipitation process for recovery of zinc, lead, and copper from the baghouse dust collected from smelter emissions.

Inventor: Edward H Shelander  
State : GA

Contact:  
Edward H Shelander  
P.O. Box #603  
Brunswick GA 31520  
912-265-8464

Status: Complete

Status Date: 06/01/81

OERI No.: 001300

Patent Status : Patent # - 3849121  
Development Stage : Prototype Test  
Technical Category: Industrial Processes

Recv by NIST : 08/09/76  
Recom. by NIST : 01/24/79  
Award Date : 03/28/80 Award Amount: \$ 89,742 Grant No: FG01-80CS15004  
Contract Period: 03/28/80 - 06/01/81

Summary: A grant of \$89,742 was awarded, and has been completed to provide an engineering and economic analysis of the subject process. At last account, grantee was looking for several million dollars venture start-up capital.

\*\*\*\*\*

DOE No: 0094

DOE Coord: J. Aellen

Title: Lantz Converter

Description: Unit for pyrolyzing municipal refuse that uses natural gas to bring converter up to pyrolyzing temperature and then switches to pyrolytic gases to maintain the process.

Inventor: William M FioRito  
State : CA

Contact:  
William M FioRito  
12650 Mantilla Road  
San Diego CA 92128  
914-591-5080

Status: Complete

Status Date: 07/10/85

OERI No.: 003675

Patent Status : Patent # - 2886122  
Development Stage : Concept Development  
Technical Category: Industrial Processes

Recv by NIST : 03/02/78  
Recom. by NIST : 01/30/79  
Award Date : 09/20/82 Award Amount: \$134,000 Grant No: FG01-82CE15126  
Contract Period: 09/20/82 - 09/17/83

Summary: A one year grant of \$134,000 was awarded to instrument the Lantz Converter under engineering- test conditions to determine significant operating and economic factors.

DOE No: 0095 DOE Coord: D. G. Mello

Title: Omni-Horizontal Axis-Wind Turbine

Description: A low cost, self starting, horizontal axis wind turbine with novel blade orientation. Operation is relatively insensitive to wind direction.

Inventor: Val O Bertoia  
State : PA

Contact:  
Val O Bertoia

Status: No DOE Support

Status Date: 08/06/80

OERI No.: 003875

Patent Status : Disclosure Document Program

Development Stage : Concept Development

Technical Category: Other Natural Sources

Recv by NIST : 04/10/78

Recom. by NIST : 01/30/79

Summary: Inventor requested project be terminated for his convenience. Preliminary DOE review suggested that project would not be economically justifiable.

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DOE No: 0096 DOE Coord: J. Aellen

Title: Leavell, Vibrationless, Low Noise, High Efficiency, Pneumatic Percussion Tools and Air Compressor Systems

Description: Pneumatic tools (paving breaker, etc.) reconfigured to obtain additional energy from high temperature compressed air. High temperature and low pressure requires larger displacement and therefore overall size to achieve same output power.

Inventor: Floyd R Anderson  
State : AR

Contact:  
Floyd R Anderson  
Vast Research Company  
Seven Tiffany Lane  
Bella Vista AR 72712  
501-855-9202

Status: Complete

Status Date: 07/28/80

OERI No.: 001869

Patent Status : Patent # - 3266581 and others

Development Stage : Prototype Test

Technical Category: Combustion Engines & Components

Recv by NIST : 02/28/77

Recom. by NIST : 02/28/79

Award Date : 09/12/79 Award Amount: \$ 76,675 Grant No: FG01-80IR10305

Contract Period: 09/12/79 - 06/11/80

Summary: A grant of \$76,675 was awarded to design, build, and test six pneumatic tools. Independent test evaluation by a third party did analyze energy input and output, rate of work, noise and vibration. Results have been compared with performance of conventional tools; all criteria show outstanding advantages of the Anderson system. Company has raised \$3 million in private investments and 130 units have been put into demonstration service. Product is available for distributor sales.

DOE No: 0097 DOE Coord: J. Aellen

Title: Water Drying System

Description: A technique for removing wash water from manufactured parts by dipping parts into degreaser solvent and mechanically separating water by virtue of differences in liquid densities.

Inventor: James W McCord  
State : KY

Contact:  
James W McCord  
Corpane Industries, Inc.  
250 Production Court  
Bluegrass Industrial Park  
Louisville KY 40299  
502-491-4433

Status: Complete Status Date: 09/10/80 OERI No.: 003679

Patent Status : Patent Applied For  
Development Stage : Engineering Design  
Technical Category: Industrial Processes

Recv by NIST : 08/09/76  
Recom. by NIST : 02/28/79  
Award Date : 09/10/80 Award Amount: \$ 93,800 Grant No: FG01-80CS15025  
Contract Period: 09/10/80 - 06/10/82

Summary: A grant of \$93,800 was awarded to design and construct demonstration models of a system to degrease and dry metal parts prior to painting. Product is available for custom installation in production lines. The inventor has been successful in marketing his product.

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DOE No: 0098 DOE Coord: D.G.Mello

Title: Process Development to Conserve Energy and Material- --(in the manufacture of)---Bearings

Description: A methodology for continuously casting a sheet of the desired bearing alloy, in the desired thickness, cutting it to the proper length, rolling it to the specified diameter, and welding it together.

Inventor: James L Chill  
State : OH

Contact:  
James L. Chill, President  
Chillcast, Inc.  
404 Executive Boulevard  
Marion OH 43302  
614-383-6337

Status: Complete Status Date: 06/30/83 OERI No.: 003547

Patent Status : Patent Applied For  
Development Stage : Prototype Development  
Technical Category: Industrial Processes

Recv by NIST : 02/17/78  
Recom. by NIST : 03/14/79  
Award Date : 01/07/80 Award Amount: \$123,994 Grant No: FG01-80IR10321  
Contract Period: 01/07/80 - 06/30/83

Summary: A grant was awarded to work with Battelle Memorial Institute to optimize the rolling-pass and heat treatment schedules, establish and compare the performance characteristics of the prototype bearings with those made by current methods, evaluate cylindrical bearings with and without a seam weld, and investigate performance of prototypes containing only 3% tin. An entrepreneur is needed to market this invention successfully.

DOE No: 0099 DOE Coord: D. G. Mello

Title: Light Weight Composite Trailer Tubes

Description: A design and manufacturing method for manufacture of composite pressure vessels employed in highway transport of gaseous fuel.

Inventor: Oscar Weingart  
State : CA

Contact:  
Ed Morris, President  
Struct. Comp Ind., Inc.  
325 Enterprise Avenue  
Pamona CA 91768  
714-594-7777

Status: Complete Status Date: 01/14/80 OERI No.: 004059

Patent Status : Disclosure Document Program  
Development Stage : Engineering Design  
Technical Category: Transportation Systems, Vehicles & Components

Recv by NIST : 06/05/78  
Recom. by NIST : 03/30/79  
Award Date : 01/14/80 Award Amount: \$ 96,000 Grant No: FG01-80IR10319  
Contract Period: 01/14/80 - 12/31/80

Summary: A grant of \$96,000 was awarded to design, fabricate, and test a large scale section of a new light-weight composite trailer tube for highway transportation of compressed gases. Product requires sponsor for commercial introduction. Licensing is available. Prototype product sales total \$50,000.

\*\*\*\*\*

DOE No: 0100 DOE Coord: J. Aellen

Title: Solaroll

Description: A flexible rubber tubing solar collector for hot water and building heating systems. Collector is extrusion of ethylene-propylene-diamine rubber.

Inventor: Michael F Zinn  
State : NY

Contact:  
Michael F Zinn  
Bio-Energy Systems, Inc.  
Box #191  
Ellenville NY 12428  
914-647-6482

Status: Complete Status Date: 03/25/80 OERI No.: 003236

Patent Status : Not Applied For  
Development Stage : Limited Production/Marketing  
Technical Category: Direct Solar

Recv by NIST : 12/05/77  
Recom. by NIST : 03/30/79  
Award Date : 05/24/80 Award Amount: \$110,390 Grant No: FG01-80CS15002  
Contract Period: 05/24/80 - 11/25/81

Summary: A grant of \$110,390 was awarded to test the product's performance in a variety of applications; in limited production/marketing stage when recommended. Sales for 1981 exceeded \$4 million through 400 distributors and dealers in the U.S and from licensees in five foreign countries. Company now publicly held, from \$2.5 million stock issue and employs 100 in three divisions. New products are developed and on the market.

DOE No: 0101 DOE Coord: P.M.Hayes

Title: Controlled Combustion Engine

Description: A modified intake valve for spark ignition engines. Creates increased turbulence at low throttle settings to allow lean burning mixtures.

Inventor: Sharad M Dave  
State : MI

Contact:  
Sharad M Dave  
27689 Doreen  
Farmington Hills MI 48024  
313-478-5976

Status: Complete Status Date: 11/30/82 OERI No.: 002114

Patent Status : Patent # - 3762381  
Development Stage : Concept Development  
Technical Category: Combustion Engines & Components

Recv by NIST : 02/28/77  
Recom. by NIST : 04/20/79  
Award Date : 05/05/81 Award Amount: \$ 85,000 Grant No: FG01-81CS15040  
Contract Period: 05/05/81 - 11/30/82

Summary: An award of \$85,000 to modify a conventional engine was granted to provide variable valving in a variety of designs and test on an engine dynamometer both for efficiency and performance. The project is completed. Inventor is seeking licensing.

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DOE No: 0102 DOE Coord: D.G.Mello

Title: Method of Burning Residual Fuel Oil in Distillate Fuel Oil Burners

Description: The invention is a method to convert standard distillate fuel oil burners to residual fuel oil, which is accomplished by heating that portion of the combustion air used to atomize the fuel oil.

Inventor: Frank C Bernhard  
State : MO

Contact:  
Frank C Bernhard  
11936 Claychester Drive  
St. Louis MO 63131  
314-822-3484

Status: Complete Status Date: 02/21/80 OERI No.: 003205

Patent Status : Patent # - 3977823  
Development Stage : Concept Development  
Technical Category: Buildings, Structures & Components

Recv by NIST : 12/19/77  
Recom. by NIST : 04/24/79  
Award Date : 02/21/80 Award Amount: \$ 43,550 Grant No: FG01-80CS15003  
Contract Period: 02/21/80 - 09/30/82

Summary: A grant of \$43,550 was awarded to design and build a packaged, self-contained fuel oil burning test stand that can burn residual fuel oil in any low-pressure, atomizing fuel oil burner. Test showed technical viability. Market presently very poor.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0103 DOE Coord: P.M.Hayes

Title: Low Voltage Ionic Fluorescent Light Bulb

Description: Fluorescent light bulb built on Edison base. Excited by array of gas discharge tubes. Uniform output, high efficiency, and long life are claimed.

Inventor: Edwin E Eckberg  
State : ID

Contact:  
Edwin E Eckberg  
Ecklux R & D Vacuum Lab Inc  
5504 Currier Road  
Boise ID 83705  
208-343-7442

Status: Complete Status Date: 09/10/81 OERI No.: 001446

Patent Status : Patent # - 3447098 and others  
Development Stage : Engineering Design  
Technical Category: Buildings, Structures & Components

Recv by NIST : 09/17/76  
Recom. by NIST : 04/30/79  
Award Date : 03/12/80 Award Amount: \$ 73,554 Grant No: FG01-80CS15007  
Contract Period: 03/12/80 - 09/10/81

Summary: A grant was awarded to design, develop, fabricate and test a series of one, two and four- bulb configuration low-voltage fluorescent ionic light bulbs. The one-bulb version will be developed to a point suitable for semi-automatic machine production. The grant was completed. The inventor is deceased. An entrepreneur is needed to develop further and market this invention.  
\*\*\*\*\*

DOE No: 0104 DOE Coord: G. K. Ellis

Title: Low Continuous Energy Mass Separation System

Description: The invention is a combination of any two or all three separation techniques involving chromatography, electrophoresis, and centrifugation (common in all combinations) to provide a low-energy continuous separation of chemical species, either in the gas phase or liquid phase.

Inventor: Eskil L Karlson  
State : PA

Contact:  
Eskil L Karlson  
4634 State Street  
Erie PA 16509  
814-871-7000

Status: Complete Status Date: 04/26/81 OERI No.: 002186

Patent Status : Patent Applied For  
Development Stage : Laboratory Test  
Technical Category: Miscellaneous

Recv by NIST : 05/11/77  
Recom. by NIST : 04/30/79  
Award Date : 02/26/80 Award Amount: \$ 83,015 Grant No: FG01-80CS15008  
Contract Period: 02/26/80 - 04/26/81

Summary: A grant was awarded to build and test two laboratory models. More development needed but the results encouraging with 90 percent separation each pass at several gal/min throughput.

DOE No: 0105

DOE Coord: J. Aellen

Title: High Frequency Furnace

Description: A furnace for the melting of reactive metals and semi-conductors which must be obtained in high purity form. It employs high frequency heating in a manner that allows the metal being melted to form its own crucible.

Inventor: Allen D Zumbrunnen  
State : UT

Contact:  
Allen D Zumbrunnen  
419 Sherman Avenue  
Salt Lake City UT 84115  
801-466-2663

Status: Complete

Status Date: 07/10/85

OERI No.: 002467

Patent Status : Patent # - 4133969  
Development Stage : Concept Development  
Technical Category: Industrial Processes

Recv by NIST : 06/24/77  
Recom. by NIST : 04/30/79  
Award Date : 09/30/81 Award Amount: \$121,554 Grant No: FG01-81CS15077  
Contract Period: 09/30/81 - 12/31/83

Summary: A grant of \$121,554 was awarded to build and test a prototype high frequency induction furnace for the production of silicon for solar cells.

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DOE No: 0106

DOE Coord: D. G. Mello

Title: Deep Shaft Hydro-Electric Power

Description: A proposal to investigate the use of underground salt domes/caves as pumped storage of water for production of peak demand electricity.

Inventor: James L Ramer  
State : MO

Contact:  
James L Ramer

Status: No DOE Support

Status Date: 07/18/79

OERI No.: 002753

Patent Status : Not Applied For  
Development Stage : Concept Definition  
Technical Category: Miscellaneous

Recv by NIST : 09/30/77  
Recom. by NIST : 05/10/79

Summary: Material submitted as proposal to DOE described a concept that related several known ideas and proposed to unite them into one large experiment. The work was not definitive or feasible enough to justify grant award by DOE.

DOE No: 0107 DOE Coord: J.Aellen

Title: Waste Products Reclamation Process

Description: This is a process for desulfurizing combustion gases, with a by-product "Linfans" which is claimed to have economic uses as a 1) construction material, 2) reagent for treating waste water, and 3) agent to react with sulphur dioxide in stack gas scrubbing processes.

Inventor: Ping-Wha Lin  
State : IN

Contact:  
Ping-Wha Lin  
506 South Darling Street  
Angola IN 46703  
219-665-5425

Status: Complete Status Date: 09/30/82 OERI No.: 001416

Patent Status : Patent # - 3861930 and others  
Development Stage : Laboratory Test  
Technical Category: Industrial Processes

Recv by NIST : 09/09/76  
Recom. by NIST : 05/31/79  
Award Date : 09/30/82 Award Amount: \$129,888 Grant No: FG01-81CS15143  
Contract Period: 09/30/82 - 12/31/83

Summary: A grant of \$129,888 was awarded to define the operating parameters and optimize the variables. Final report shows considerable uses for the invention. Inventor attempting to find customers and suppliers, etc.

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DOE No: 0108 DOE Coord: G. K. Ellis

Title: Processing Recovery of Aluminum

Description: The invention is a mechanical process, operated at room temperature, (except for the reduction step) for separating aluminum metal from the dross.

Inventor: Paul J Cromwell  
State : NY

Contact:  
Robert J Cromwell  
120 Huntington Street  
Chardon OH 44024  
216-285-9306

Status: Complete Status Date: 06/12/81 OERI No.: 004688

Patent Status : Patent # - 4126673  
Development Stage : Prototype Test  
Technical Category: Industrial Processes

Recv by NIST : 12/27/78  
Recom. by NIST : 05/31/79  
Award Date : 06/11/80 Award Amount: \$158,029 Grant No: FG01-80CS15009  
Contract Period: 06/11/80 - 06/12/81

Summary: A grant of \$158,029 was used to develop a mechanical process for recovering aluminum from dross (i.e. waste). The inventor secured \$1.5 million in financing and opened a plant in Buffalo. The plant was closed down however, due to the depressed nature of the aluminum industry. Subsequently, the inventor patented a new process for melting aluminum beverage cans.

DOE No: 0109 DOE Coord: D.G.Mello

Title: Hydrostatic Meat Tenderizer

Description: The invention is a method for tenderizing low-grade, grass fed beef by subjecting the boned meat to a hydrostatic pressure of over 15,000 psi for several minutes.

Inventor: H. W. Kennick  
State : OR

Contact:  
H. W. Kennick  
Clark Meat Science Lab  
Oregon State University  
Corvallis OR 97331  
503-754-3675

Status: Complete Status Date: 06/24/80 OERI No.: 003321

Patent Status : Not Applied For  
Development Stage : Prototype Test  
Technical Category: Miscellaneous

Recv by NIST : 01/11/78  
Recom. by NIST : 06/19/79  
Award Date : 06/24/80 Award Amount: \$ 86,000 Grant No: FG01-80CS15013  
Contract Period: 06/24/80 - 03/01/83

Summary: A grant of \$86,000 was awarded to investigate and develop a feasible commercial process. The projects results show that the process is feasible and the product is at least as tender and tasty as traditionally processed grain-fed beef. Technical data are available for the cost of handling from the Oregon State University.

\*\*\*\*\*

DOE No: 0110 DOE Coord: D.G.Mello

Title: Improved Windpower Generating System

Description: Self-regulating, two-part windmill rotor with inner part for low-speed wind and outer part for high- speed wind.

Inventor: Karl H. Bergey  
State : OK

Contact:  
Karl H. Bergey  
Route #1, Box #151B  
Norman OK 73069  
405-364-3675

Status: Complete Status Date: 08/27/80 OERI No.: 003425

Patent Status : Patent Applied For  
Development Stage : Prototype Development  
Technical Category: Other Natural Sources

Recv by NIST : 01/19/78  
Recom. by NIST : 06/29/79  
Award Date : 08/26/80 Award Amount: \$ 74,875 Grant No: FG01-08CS15011  
Contract Period: 08/26/80 - 09/30/82

Summary: A 13-month grant of \$74,875 was awarded for the development of an analytical program to characterize the operation of the Bergey windmill, design and test the prototype, and perform an economic analysis of the benefits of the design. Invention is available for wholesale and retail distribution.

DOE No: 0111 DOE Coord: P.M.Hayes

Title: Haspert Mining System

Description: The invention is intended for developing rectangular openings for mineral development. It is a mechanical apparatus that cuts linear grooves in rock using drag bits and then breaks the rock between the grooves primarily in the tension mode. Potential applications are in oil shale, rock and possibly coal.

Inventor: John C Haspert  
State : CA

Contact:  
John C. Haspert  
P.O. Box #1252  
Arcadia CA 91006

Status: Complete Status Date: 09/11/81 OERI No.: 003688

Patent Status : Patent # - 4062594  
Development Stage : Limited Production/Marketing  
Technical Category: Fossil Fuels

Recv by NIST : 03/27/78  
Recom. by NIST : 06/29/79  
Award Date : 03/27/80 Award Amount: \$125,000 Grant No: FG01-80CS15006  
Contract Period: 03/27/80 - 06/30/81

Summary: A grant was awarded to provide a complete set of preliminary design drawings for a prototype machine for "driving" a drift for the mining of oil shale and coal. The cutter produces uniformly sized material at lower costs than present methods. The work was completed and the inventor seeks licensing and/or venture capital.  
\*\*\*\*\*

DOE No: 0112 DOE Coord: D.G.Mello

Title: Pump

Description: A conventional steam injector to serve as both feedwater pump and direct contact feedwater heater in conventional steam power plants.

Inventor: Paul Zaroni  
State : CT

Contact:  
Paul Zaroni  
Boulder Engineering, Inc.  
Fifty-Five Highland Street  
Weathersfield CT 06109  
203-569-0446

Status: Complete Status Date: 11/07/85 OERI No.: 000548

Patent Status : Patent # - 3314236  
Development Stage : Concept Development  
Technical Category: Fossil Fuels

Recv by NIST : 12/29/75  
Recom. by NIST : 07/26/79  
Award Date : 08/03/81 Award Amount: \$ 99,870 Grant No: FG01-81CS15057  
Contract Period: 08/03/81 - 11/07/85

Summary: A grant was awarded to design, build, and install system for field tests at Worcester Polytech in Massachusetts. System will operate in conjunction with existing steam power plant. The inventor complains that he is not getting proper cooperation from Worcester Polytech, making it impossible to complete the project. The project was closed unfinished.

DOE No: 0113

DOE Coord: P.M.Hayes

Title: Wallace Mold Additive System

Description: A device and method for feeding small pieces of metal scrap of known composition and at a fixed rate into a mold, while molten metal is being poured.

Inventor: Henry J Wallace  
State : PA

Contact:  
Henry J Wallace  
570 Squaw Run Road  
Pittsburgh PA 15238  
412-963-0969

Status: Complete

Status Date: 09/21/83

OERI No.: 003865

Patent Status : Patent # - 3871058 and others  
Development Stage : Prototype Development  
Technical Category: Industrial Processes

Recv by NIST : 04/20/78  
Recom. by NIST : 07/31/79  
Award Date : 09/22/82 Award Amount: \$ 89,000 Grant No: FG01-82CE15093  
Contract Period: 09/22/82 - 09/21/83

Summary: A grant of \$89,000 was awarded to build and test a feeding device to be installed on a mini-mill located in Florida. The grant work is completed. The Wallace injection system is patented in the U.S. and many other countries. The inventor is seeking licensing arrangement for his process through Blair- Knox Equipment Division of Blairnox, Pa. 412-781- 2700. Blair-Knox Equipment is licensed to supply apparatus for the Wallace Additive Injection System.

\*\*\*\*\*

DOE No: 0114

DOE Coord: P.M.Hayes

Title: New Energy-Saving Tire for Motor Vehicles

Description: An automobile tire of innovative design intended to reduce rolling friction below that of equivalent radial tires. Special rims are required.

Inventor: Renato Monzini  
Country : Milan, Italy

Contact:  
Mario Bruno

Status: No DOE Support

Status Date: 06/19/80

OERI No.: 003863

Patent Status : Patent # -  
Development Stage : Prototype Development  
Technical Category: Transportation Systems, Vehicles & Components

Recv by NIST : 04/20/78  
Recom. by NIST : 07/31/79

Summary: DOE could find no basis for support.

DOE No: 0115 DOE Coord: D. G. Mello

Title: Refrigeration System

Description: Device to be installed between the compressor and the air cooled condenser in a small refrigeration unit. It consists of a dryer-filter heat exchanger, a venturi-ejector, and connecting piping.

Inventor: Clyde G Phillips  
State : DE

Contact:  
Clyde G Phillips  
Rural Route #2  
Box #148-G, Angola Beach  
Lewes DE 19971  
302-945-9093

Status: Complete Status Date: 02/22/80 OERI No.: 001188

Patent Status : Patent # - 3783629  
Development Stage : Laboratory Test  
Technical Category: Miscellaneous

Recv by NIST : 07/02/76  
Recom. by NIST : 07/31/79  
Award Date : 12/07/79 Award Amount: \$ 6,910 Grant No: FG01-80IR10318  
Contract Period: 12/07/79 - 12/01/80

Summary: The grantee installed his device in one large- capacity, and one small-capacity commercially available air conditioners and shipped them to an independent testing laboratory where the change in performance was documented. No energy savings were apparent.

\*\*\*\*\*

DOE No: 0116 DOE Coord: G. K. Ellis

Title: Model 5000 ASEPAK System

Description: The inventions are for new methods for fabricating and aseptically filling sterile plastic bags with certain classes of food materials that have been previously sterilized by ultra-high temperature processes for very short periods of time.

Inventor: Roy J Weikert  
State : OH

Contact:  
Roy J Weikert

Status: No DOE Support Status Date: 10/04/80 OERI No.: 002946

Patent Status : Patent # - 3813845 and others  
Development Stage : Prototype Development  
Technical Category: Industrial Processes

Recv by NIST : 11/04/77  
Recom. by NIST : 08/30/79

Summary: Unable to identify suitable scope of work which was both agreeable to the inventor and supportable by DOE.

DOE No: 0117 DOE Coord: J. Aellen

Title: "Solarspan" Prism Trap

Description: An all-plastic, black liquid, solar collector with provisions for freeze and overheat protection. Plastic can be molded to give good structural properties with thin sections.

Inventor: John Mattson  
State : MA

Contact:  
George E Mattson  
361 Moraine Street  
Brockton MA 02401  
617-585-3598

Status: Complete Status Date: 09/30/80 OERI No.: 002189

Patent Status : Patent Applied For  
Development Stage : Prototype Test  
Technical Category: Direct Solar

Recv by NIST : 03/28/77  
Recom. by NIST : 09/20/79  
Award Date : 09/30/80 Award Amount: \$ 98,700 Grant No: FG01-80CS15024  
Contract Period: 09/30/80 - 10/30/81

Summary: A grant of \$98,700 was awarded to design, test and construct, low-cost plastic solar water heating panels. The project was successful. Evaluation by the Oak Ridge National Laboratory comments that this invention "will save the solar program by showing all concerned that low costs can be achieved." Product is available for wholesale distribution.

\*\*\*\*\*

DOE No: 0118 DOE Coord: J.Aellen

Title: Energy Adaptive Control of Precision Grinding

Description: An otherwise conventional, universal, external cylindrical grinder retrofitted with a computer control to save energy in removing metal.

Inventor: Roderick L Smith  
State : IL

Contact:  
Roderick L Smith  
Energy Adaptive Grinding, Inc.  
2012 Greenfield Lane  
Rockford IL 61107  
815-399-5614

Status: Complete Status Date: 07/10/85 OERI No.: 003876

Patent Status : Patent # - 3653855  
Development Stage : Prototype Test  
Technical Category: Industrial Processes

Recv by NIST : 04/24/78  
Recom. by NIST : 09/27/79  
Award Date : 09/15/81 Award Amount: \$ 99,328 Grant No: FG01-81CS15075  
Contract Period: 09/15/81 - 09/15/82

Summary: A grant of \$99,328 was awarded to perform a complete engineering design and test of the invention prototype equipment. The technology has been licensed to the Caterpillar Tractor Company.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0119 DOE Coord: G.K.Ellis

Title: Air Ratio Controller (AERTROL)

Description: A controller that controls the running time of a blower in proportion to the rate of flow of liquid in forced aeration type sewage plants; developed specifically to serve many small package treatment plants with liquid flow of less than 100,000 gallons per day.

Inventor: Eldon L Asher  
State : FL

Contact:  
Otis W Smith

Status: No DOE Support Status Date: 07/17/81 OERI No.: 004056

Patent Status : Disclosure Document Program  
Development Stage : Concept Development  
Technical Category: Industrial Processes

Recv by NIST : 06/05/78  
Recom. by NIST : 09/28/79

Summary: Proposal for marketing was rejected by DOE.

\*\*\*\*\*

DOE No: 0120 DOE Coord: D.G.Mello

Title: Vapor Heat Transfer Commercial Griddle

Description: A griddle for restaurants with its surface heated by vapor condensation. This vapor is boiled with electric elements in a sump below the griddle surface. Vapor and condensed liquid are hermetically sealed.

Inventor: Robert Zartarian  
State : NJ

Contact:  
Robert Zartarian  
Systech Industries  
Six Hialeah Court  
West Long Beach NJ 07764  
201-449-3700

Status: Complete Status Date: 10/30/86 OERI No.: 004562

Patent Status : Patent Applied For  
Development Stage : Limited Production/Marketing  
Technical Category: Miscellaneous

Recv by NIST : 11/02/78  
Recom. by NIST : 10/17/79  
Award Date : 09/02/82 Award Amount: \$ 72,603 Grant No: FG01-82CE15124  
Contract Period: 09/02/82 - 08/31/83

Summary: A 12-month grant of \$72,603 was awarded for a two-phase, 7-task development project in which the grantee performed R & D tasks relating to product improvement and safety, as well as market development. Marketing plans depend on future financial assistance from the private sector.

DOE No: 0121 DOE Coord: J. Aellen

Title: Solar Space Heating for both Retrofit and New Construction

Description: Passive solar collector using air as the transfer fluid. Designed for vertical south wall of a structure.

Inventor: James B Whitmore  
State : MI

Contact:  
James B Whitmore

Status: No DOE Support Status Date: 09/30/80 OERI No.: 004843

Patent Status : Not Applied For  
Development Stage : Limited Production/Marketing  
Technical Category: Direct Solar

Recv by NIST : 02/08/79

Recom. by NIST : 10/25/79

Summary: Inventor is in commercial production. Over 6000 installations, costing \$30 million, have been made.

\*\*\*\*\*

DOE No: 0122 DOE Coord: J. Aellen

Title: Lean Limit Controller

Description: A device to apply adaptive control to air-fuel metering in internal combustion engines.

Inventor: Ervin Leshner  
State : NJ

Contact:  
Fuel Injection Development Cor  
256 South Van Pelt  
Philadelphia PA 19103  
215-735-8704

Status: Complete Status Date: 09/24/80 OERI No.: 004035

Patent Status : Patent # - 4015572  
Development Stage : Prototype Test  
Technical Category: Combustion Engines & Components

Recv by NIST : 01/12/78

Recom. by NIST : 11/23/79

Award Date : 09/24/80 Award Amount: \$ 99,500 Grant No: FG01-80CS15022

Contract Period: 09/24/80 - 12/24/81

Summary: An grant of \$99,500 was awarded to design and test a lean limit control device for an internal combustion engine. Device is workable but engineering estimates show it will not be cost effective.

DOE No: 0123 DOE Coord: G.K. Ellis

Title: Comminution of Ores by a Low-Energy Process

Description: Heating with microwaves to differentially expand and fracture the sulphur containing elements of ore and porphyry rock, intended as a preliminary stage in the processing of ore before the grinding stage.

Inventor: J Paul Pemsler  
State : MA

Contact:  
J. Paul Pemsler, President  
Castle Technology Corp.  
P. O. Box #403  
Lexington MA 02133  
617-861-1274

Status: Complete Status Date: 11/25/81 OERI No.: 004573

Patent Status : Disclosure Document Program  
Development Stage : Laboratory Test  
Technical Category: Industrial Processes

Recv by NIST : 11/06/78  
Recom. by NIST : 11/29/79  
Award Date : 09/15/80 Award Amount: \$ 90,394 Grant No: FG01-80CS15020  
Contract Period: 09/15/80 - 11/25/81

Summary: A grant of \$90,394 was awarded to explore the technical feasibility and determine the energy input for the process. The energy requirements to accomplish any practical degree of fracturing were found to be beyond the range of equipment that was available for this project.

\*\*\*\*\*

DOE No: 0124 DOE Coord: J.Aellen

Title: Solar Collector

Description: This solar collector is a two foot square module constructed entirely of a non-porous ceramic which has been fired at high temperatures so that it is vitrified.

Inventor: Charlton Sadler  
State : FL

Contact:  
Charlton Sadler

Status: No DOE Support Status Date: 06/02/82 OERI No.: 004352

Patent Status : Patent # - 4170983 and others  
Development Stage : Working Model  
Technical Category: Direct Solar

Recv by NIST : 08/30/78  
Recom. by NIST : 11/30/79

Summary: Unable to agree with the inventor upon an acceptable statement of work.

DOE No: 0125 DOE Coord: G.K.Ellis

Title: The Turbulator Burner System

Description: Invention is a stirred heat exchanger (SHE) consisting of a heat exchanger with an annular cross section surrounding a region where the higher temperature fluid flows axially. Blades attached to an axial shaft stir the fluid at the surface of convective heat transfer. Offers possibility of enhanced heat transfer using dirty gases.

Inventor: Frank W Bailey  
State : NJContact:  
Frank W Bailey  
P.O. Box #94  
Fourth Avenue  
Haskell NJ 07420

Status: Complete

Status Date: 09/30/81

OERI No.: 000707

Patent Status : Patent Applied For  
Development Stage : Prototype Test  
Technical Category: Buildings, Structures & ComponentsRecv by NIST : 02/11/76  
Recom. by NIST : 12/31/79  
Award Date : 09/11/80 Award Amount: \$ 75,000 Grant No: FG01-81CS15016  
Contract Period: 09/11/80 - 09/14/81

Summary: A grant of \$75,000 was awarded to design, build, test, and evaluate both an externally and an internally stirred heat exchanger.

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DOE No: 0126 DOE Coord: J. Aellen

Title: Vaclaim

Description: A system for use in metal casting foundries. Reclaims heat from metal castings and energy from the binder in no-bake molds. Eliminates smoke and fumes from the foundry.

Inventor: Karl D Scheffer  
State : NYContact:  
Karl D Scheffer  
121 Governor Drive  
Scotia NY 12302  
518-399-0016

Status: Complete

Status Date: 04/01/81

OERI No.: 004970

Patent Status : Not Applied For  
Development Stage : Laboratory Test  
Technical Category: Industrial ProcessesRecv by NIST : 03/19/79  
Recom. by NIST : 12/31/79  
Award Date : 04/01/81 Award Amount: \$ 97,734 Grant No: FG01-81CS15036  
Contract Period: 04/01/81 - 06/30/83

Summary: A grant of \$97,734 was awarded for fabrication and testing heat recovery in vacuum metal casting process using no-bake molds. Inventor seeks license arrangements.

DOE No: 0127

DOE Coord: D.G.Mello

Title: Process and Apparatus to Produce Crude Oil from Tar Sands

Description: Two-vessel, fluidized bed system connected by heat pipes to transfer heat between the upper pyrolizer vessel and the lower combustor vessel in which char residue is burned. Clean sand comes out in the tailings and a usable grade of synthetic crude oil out the overhead.

Inventor: J D Seader  
State : UT

Contact:  
J D Seader  
Merrill Engineering Building  
University of Utah  
Sale Lake City UT 84112  
801-581-6348

Status: Complete

Status Date: 09/16/84

OERI No.: 005003

Patent Status : Patent # -  
Development Stage : Laboratory Test  
Technical Category: Fossil Fuels

Recv by NIST : 03/26/79  
Recom. by NIST : 12/31/79  
Award Date : 09/16/82 Award Amount: \$ 49,949 Grant No: FG01-82CE15136  
Contract Period: 09/16/82 - 09/30/83

Summary: A 12-month grant of \$49,949 was awarded to the University of Utah to design, construct, and operate a device for the purpose of producing crude oil from tar sands. Goals to prove the design, optimize the variables (including the product mix), and to prove the concept have been achieved.

\*\*\*\*\*

DOE No: 0128

DOE Coord: D.G.Mello

Title: Continuous Distillation Apparatus and Method

Description: New design for distilling column where the rectifying and stripping sections are side by side, and heat pipes transfer heat from the rectifying to the stripping section.

Inventor: J D Seader  
State : UT

Contact:  
J D Seader  
Merrill Engineering Building  
University of Utah  
Salt Lake City UT 84112  
801-581-6348

Status: Complete

Status Date: 04/02/85

OERI No.: 005004

Patent Status : Patent Applied For  
Development Stage : Concept Development  
Technical Category: Fossil Fuels

Recv by NIST : 03/26/79  
Recom. by NIST : 12/31/79  
Award Date : 09/16/82 Award Amount: \$ 49,652 Grant No: FG01-82CE15138  
Contract Period: 09/16/82 - 09/30/83

Summary: A 12-month grant of \$49,652 was awarded to the University of Utah to design, construct, and operate a model distillation apparatus to simulate the rectifying and stripping sections of a proposed continuous distillation apparatus.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0129 DOE Coord: J. Aellen

Title: Super U System - Snap Strap

Description: Super U-Snap strap insulation system which is an innovative application technique.

Inventor: James E Kessler  
State : MO

Contact:  
James E Kessler  
9913 Walnut Drive, #201  
Kansas City MO 64114

Status: Complete Status Date: 11/28/80 OERI No.: 004007

Patent Status : Patent # - 4069636  
Development Stage : Prototype Development  
Technical Category: Buildings, Structures & Components

Recv by NIST : 05/24/78  
Recom. by NIST : 01/31/80  
Award Date : 11/28/80 Award Amount: \$ 84,642 Grant No: FG01-81CS15209  
Contract Period: 11/28/80 - 11/28/81

Summary: A grant of \$84,642 was awarded to test market the Super U System. The project has created ten jobs, and sales have increased 100% (to \$300,000). Product is available for franchise.

\*\*\*\*\*

DOE No: 0130 DOE Coord: J.Aellen

Title: Furnace Input Capacity Trimming Switch

Description: A simple inexpensive device for gas and oil furnaces to reduce the flue gas heat loss. During morning startup, when the room thermostat is calling for heat, the device will cycle the furnace on and off to minimize flue gas heat loss.

Inventor: Arnold R Post  
State : MD

Contact:  
Arnold R Post

Status: No Request Recvd Status Date: 08/30/91 OERI No.: 004389

Patent Status : Disclosure Document Program  
Development Stage : Laboratory Test  
Technical Category: Buildings, Structures & Components

Recv by NIST : 09/11/78  
Recom. by NIST : 02/26/80

Summary: Project terminated because inventor failed to respond. After repeated requests, inventor was finally informed that he had until August 30, 1981 to submit a preliminary proposal or his invention would no longer be considered for DOE support. Inventor failed to respond - project terminated.

DOE No: 0131 DOE Coord: J. Aellen

Title: Valve Deactuator for Internal Combustion Engines

Description: A retrofit device that can provide variable displacement operation on existing gasoline engines by one cylinder at a time deactuating.

Inventor: Edgar R Jordon  
State : MI

Contact:  
N. John Beck  
Fuel Injection Development Co  
5141 Santa Fe Street  
San Diego CA 92109  
619-270-6760

Status: Complete Status Date: 09/25/80 OERI No.: 005110

Patent Status : Patent # - 4114588  
Development Stage : Prototype Development  
Technical Category: Combustion Engines & Components

Recv by NIST : 05/01/79  
Recom. by NIST : 02/29/80  
Award Date : 09/25/80 Award Amount: \$ 65,972 Grant No: FG01-80CS15023  
Contract Period: 09/25/80 - 06/25/82

Summary: A grant of \$65,972 was awarded to develop and test a valve deactivator for internal combustion engines. The invention is available for sale or lease.

\*\*\*\*\*

DOE No: 0132 DOE Coord: D.G.Mello

Title: Process for Reclaiming and Upgrading Thin-Walled Malleable Waste Material

Description: A system for mechanically pelletizing ferrous and non-ferrous metals and some plastics, grading according to size, and then separating according to density by conventional gravity techniques.

Inventor: Michael Knezevich  
State : IN

Contact:  
Michael Knezevich

Status: No Request Recvd Status Date: 09/30/80 OERI No.: 003045

Patent Status : Patent # - 4119453  
Development Stage : Limited Production/Marketing  
Technical Category: Industrial Processes

Recv by NIST : 11/22/77  
Recom. by NIST : 03/25/80

Summary: Other financial commitments prevent inventor from proceeding. No request for assistance was received.

DOE No: 0133 DOE Coord: D.G.Mello

Title: AUTOTHERM Car Comfort System

Description: An auxiliary coolant circulator for an automobile which will provide heat to the vehicle operator for a period of time without requiring the engine to idle.

Inventor: F J Perhats  
State : IL

Contact:  
James V Enright  
Autotherm, Inc.  
314 East Main Street  
P.O. Box #333  
Barrington IL 60010  
312-381-6366

Status: Complete Status Date: 06/19/83 OERI No.: 004641

Patent Status : Patent Applied For  
Development Stage : Limited Production/Marketing  
Technical Category: Transportation Systems, Vehicles & Components

Recv by NIST : 07/27/78  
Recom. by NIST : 03/26/80  
Award Date : 06/19/81 Award Amount: \$ 71,034 Grant No: FG01-81CS15050  
Contract Period: 06/19/81 - 06/19/83

Summary: A grant was awarded to perform the necessary research and development to ready the invention for the marketplace. A component, the pump, is on the market with sales of \$36,000. An additional \$300,000 in sales, supporting a 5-man operation, has come from Europe and Canada. Product is available for wholesale distribution. To date the company has sold 10K units at \$160 each, altogether saving 0.625 trillion Btu/Yr. They expect to sell 5-10K units/Yr. for the next 5 years.  
\*\*\*\*\*

DOE No: 0134 DOE Coord: D.G.Mello

Title: Expanded Polystyrene Bead Insulation System

Description: A means for retro-insulating housing walls, utilizing expanded polystyrene bead insulation coated with a flame-retardant adhesive and applied with a unique blower-mixer nozzle.

Inventor: John C Rupert  
State : MN

Contact:  
John C Rupert  
1511 Grantham Street  
Saint Paul MN 55108  
612-645-0414

Status: Complete Status Date: 01/02/84 OERI No.: 005239

Patent Status : Patent Applied For  
Development Stage : Limited Production/Marketing  
Technical Category: Buildings, Structures & Components

Recv by NIST : 05/30/79  
Recom. by NIST : 03/31/80  
Award Date : 09/26/80 Award Amount: \$ 80,844 Grant No: FG01-80CS15027  
Contract Period: 09/26/80 - 12/31/82

Summary: A grant was awarded to select an adhesive/flame retardant, test it at an independent laboratory, develop the blower system, develop a business plan, and demonstrate the technology. A first commercial sale grossed \$14,000, with total residential sales grossing \$100,000. Firm employs three.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0135 DOE Coord: D.G.Mello

Title: Point Focus Parabolic Solar Collector

Description: It is a lightweight parabolic solar collector design which uses prestressed structural members and cables to achieve high rigidity at a low cost.

Inventor: M Hossein Khorsand  
State : CA

Contact:  
M Hossein Khorsand  
33042 Commodore Court  
San Juan Capistrano CA 92675

Status: Complete

Status Date: 06/22/84

OERI No.: 005216

Patent Status : Not Applied For  
Development Stage : Working Model  
Technical Category: Direct Solar

Recv by NIST : 05/29/79  
Recom. by NIST : 04/30/80  
Award Date : 06/22/82 Award Amount: \$ 97,892 Grant No: FG01-82CE15088  
Contract Period: 06/22/82 - 06/22/84

Summary: A 24-month grant of \$97,892 was awarded to design, build and analyze a prototype point focus collector.

\*\*\*\*\*

DOE No: 0136 DOE Coord: J. Aellen

Title: Windamper

Description: Wind damper for high voltage electric transmission line to prevent galloping in wind and ice storms

Inventor: Albert S Richardson, Jr.  
State : MA

Contact:  
Albert S Richardson, Jr.  
83 Second Avenue  
Burlington MA 01803  
617-862-7200

Status: Complete

Status Date: 09/01/82

OERI No.: 003885

Patent Status : Patent # - 3440328  
Development Stage : Limited Production/Marketing  
Technical Category: Miscellaneous

Recv by NIST : 04/25/78  
Recom. by NIST : 05/08/80  
Award Date : 09/01/82 Award Amount: \$ 76,000 Grant No: FG01-82CE15102  
Contract Period: 09/01/82 - 08/31/83

Summary: A 12-month grant of \$76,000 was awarded to extend the analysis of the windamper antigallop merits from single conductor to bundled conductor applications. To date, a total of 1400 units has been installed with a total market value of \$130,000. The invention is available for licensing, both domestic and foreign.

DOE No: 0137

DOE Coord: J. Aellen

Title: A Portable Pollution Free Automobile Incinerator

Description: Portable automobile incinerator

Inventor: H Roy Weber

State : HI

Contact:

H Roy Weber

Box #336

Kailua HI 96734

808-262-6548

Status: Complete

Status Date: 06/30/86

OERI No.: 005130

Patent Status : Patent Applied For

Development Stage : Prototype Development

Technical Category: Industrial Processes

Recv by NIST : 05/17/79

Recom. by NIST : 05/08/80

Award Date : 06/20/81 Award Amount: \$ 99,408 Grant No: FG01-81CS15044

Contract Period: 06/20/81 - 09/30/82

Summary: A 15-month grant of \$99,408 was awarded to fabricate, construct and test, an incinerator to prove the invention is a viable method of reducing scrap cars into satisfactory condition for recycling into the iron and steel industry. The company filed bankruptcy before the grant was completed.

\*\*\*\*\*

DOE No: 0138

DOE Coord: J. Aellen

Title: Phantom Tube

Description: Phantom tube is a non light emitting, low energy device to be paired with a fluorescent tube in rapid or instant start fixtures. Device completes the electrical circuit to allow fixtures to operate on fewer lamps than original design specified, thus reducing electric power consumption. Product lifetime is virtually unlimited.

Inventor: Gerald R Seeman

State : CA

Contact:

Bernard Joseph Margowsky

Status: No DOE Support

Status Date: 12/31/81

OERI No.: 001994

Patent Status : Patent # - 3956665

Development Stage : Limited Production/Marketing

Technical Category: Buildings, Structures &amp; Components

Recv by NIST : 03/28/77

Recom. by NIST : 05/28/80

Summary: No appropriate DOE support can be identified. Product supports 5 employees and is on the market. The relatively slow sales of 1.5 million units/year appear adequate to support any needed market research the company might wish to initiate.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0139 DOE Coord: D.G.Mello

Title: Transformer With Heat Dissipator

Description: An improved method for cooling dry-type transformers, thereby increasing their efficiency without increasing their weight and cost.

Inventor: Louis L Marton  
State : CA

Contact:  
Louis L Marton

Status: No DOE Support Status Date: 09/30/80 OERI No.: 003487

Patent Status : Patent # - 3659239 and others  
Development Stage : Limited Production/Marketing  
Technical Category: Miscellaneous

Recv by NIST : 01/16/78  
Recom. by NIST : 05/29/80

Summary: Inventor does not seek grant money but wishes us to exert legislative influence to require more efficient transformers in general. It does not appear that this service can be provided.

\*\*\*\*\*

DOE No: 0140 DOE Coord: D.G.Mello

Title: Counter Flow Dual Tube Heat Exchanger

Description: It is a simple plastic heat exchanger to preheat ventilating air for poultry or livestock barns.

Inventor: W E Mattson  
State : MN

Contact:  
Tony Wilhelm  
Wilhelm Engineering Company  
707 Second Street, West  
Ashland WI 54806  
715-682-8175

Status: Complete Status Date: 07/31/84 OERI No.: 003830

Patent Status : Not Applied For  
Development Stage : Concept Definition  
Technical Category: Industrial Processes

Recv by NIST : 04/06/78  
Recom. by NIST : 06/20/80  
Award Date : 09/22/82 Award Amount: \$ 49,758 Grant No: FG01-82CE15148  
Contract Period: 09/22/82 - 07/22/83

Summary: A 10-month grant of \$49,758 was awarded to design, fabricate, instrument and operate, a prototype dual tube heat exchanger. The invention is available for licensing. It has proved to be cost effective.

DOE No: 0141 DOE Coord: D.G.Mello

Title: New Hydrostatic Transmission

Description: A continuously variable hydraulic positive displacement transmission with lockup, overdrive, and regenerative braking for automotive and other vehicular uses.

Inventor: Samuel Shiber  
State : IL

Contact:  
Samuel Shiber  
P. O. Box #371  
Mundelein IL 60060

Status: Complete Status Date: 07/09/81 OERI No.: 003673

Patent Status : Patent Applied For  
Development Stage : Concept Development  
Technical Category: Transportation Systems, Vehicles & Components

Recv by NIST : 03/06/78  
Recom. by NIST : 06/23/80  
Award Date : 07/09/81 Award Amount: \$ 95,000 Grant No: FG01-81CS15064  
Contract Period: 07/09/81 - 07/09/83

Summary: A grant of \$95,000 was awarded to design, build and test a Volkswagen Sirocco with a prototype hydrostatic transmission installed. Project was funded with 90 percent inventor-originated funds and 10 percent DOE funds. Inventor's share was 50 percent domestic and 50 percent foreign funded. Transmission is now available for licensing.

\*\*\*\*\*

DOE No: 0142 DOE Coord: J. Aellen

Title: Process for Heatless Production of Hollow Items

Description: A metal casting method for hollow parts

Inventor: Anatol Michelson  
State : FL

Contact:  
Anatol Michelson  
3235 Pine Valley Drive  
Sarasota FL 33579  
815-388-1252

Status: Complete Status Date: 07/01/81 OERI No.: 005822

Patent Status : Patent Applied For  
Development Stage : Prototype Test  
Technical Category: Industrial Processes

Recv by NIST : 09/24/79  
Recom. by NIST : 06/26/80  
Award Date : 06/30/81 Award Amount: \$108,920 Grant No: FG01-81CS15055  
Contract Period: 06/30/81 - 12/31/82

Summary: An 18-month grant of \$108,920 was awarded to construct and test a working model to demonstrate the heatless production of hollow casting. The work has been completed. The invention has potential for greatly increasing productivity of the casting process. Inventor interested in licensing.

DOE No: 0143 DOE Coord: J Aellen

Title: Oil Well Pump Jack

Description: A new design for a pump that would replace the conventional beam pumps in pumping oil wells. It utilizes longer strokes than generally used by the beam pumps and has slower rates of acceleration/deceleration, reducing the power required to overcome the inertia of the sucker rods and other moving parts.

Inventor: Robert A Clay  
State : CA

Contact:  
Amar Amancharla  
Alphatech Corporation  
Houston TX 77052  
713-530-9060

Status: Complete Status Date: 03/06/85 OERI No.: 005888

Patent Status : Patent Applied For  
Development Stage : Prototype Test  
Technical Category: Fossil Fuels

Recv by NIST : 10/19/79  
Recom. by NIST : 06/27/80  
Award Date : 09/16/84 Award Amount: \$ 52,500 Grant No: FG01-84CE15188  
Contract Period: 09/16/84 - 03/06/85

Summary: A phase one grant of \$52,500 was made to perform engineering designs of the pump jack. Phase two will be funded upon availability of funds.

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DOE No: 0144 DOE Coord: P.M.Hayes

Title: SpaCirc Space Circulation Fan

Description: The invention is a different type of ceiling fan designed for improved circulation and mixing of air throughout an air conditioned room. The increased air velocity allows the perception of comfort at higher temperatures and humidities.

Inventor: Robert C Saunders, Junior  
State : MD

Contact:  
Robert C Saunders, Junior

Status: No DOE Support Status Date: 09/30/81 OERI No.: 005852

Patent Status : Not Applied For  
Development Stage : Concept Development  
Technical Category: Buildings, Structures & Components

Recv by NIST : 10/09/79  
Recom. by NIST : 07/23/80

Summary: Unable to reach agreement on work to be done. Inventor's interest has waned, due to several competitors now in the field and expected high costs of production of the Spacirc. No further action is anticipated.

DOE No: 0145

DOE Coord: J. Aellen

Title: Solar Conversion by Concentration Cells with Hydrides

Description: The invention is a hydrogen concentration cell which converts solar energy to electricity by using heat to generate the gas pressure to drive the cell.

Inventor: Robert E Salomon  
State : PA

Contact:  
Robert E Salomon  
Chemistry Department  
Temple University  
Philadelphia PA 19122  
215-787-7125

Status: Complete

Status Date: 07/01/81

OERI No.: 006213

Patent Status : Not Applied For  
Development Stage : Concept Development  
Technical Category: Direct Solar

Recv by NIST : 12/26/79  
Recom. by NIST : 07/29/80  
Award Date : 07/01/81 Award Amount: \$ 67,868 Grant No: FG01-81CS15043  
Contract Period: 07/01/81 - 09/30/83

Summary: A grant was awarded to build and test a laboratory model of the inventor's system, to determine efficiency and feasibility. Inventor requested an extension through 8/83 to allow summer school student assistance to continue. Inventor interested in industry financial support, and eventual licensing. This project has been completed.  
\*\*\*\*\*

DOE No: 0146

DOE Coord: J.Aellen

Title: Line Integral Method of Magneto-Electric Exploration

Description: A method of exploring for gas and oil deposits by plotting the intensity and polarities of local perturbations in the earth's magnetic field. These perturbations are caused by naturally occurring electrotelluric (ET) currents associated with the oil and gas.

Inventor: Sylvain J Pirson  
State : TX

Contact:  
Ronald M Hertzfeld  
5310 Harvest Hill  
Suite #285  
Dallas TX 75230  
214-386-9311

Status: Complete

Status Date: 08/15/83

OERI No.: 004794

Patent Status : Patent # - 3943436  
Development Stage : Limited Production/Marketing  
Technical Category: Fossil Fuels

Recv by NIST : 01/25/79  
Recom. by NIST : 07/30/80  
Award Date : 08/13/82 Award Amount: \$ 74,689 Grant No: FG01-82CE15127  
Contract Period: 08/13/82 - 08/15/83

Summary: A grant was awarded to make a priori predictions on at least 10 locations where wildcat wells are planned. Results show not only accuracy of prediction of dry/wet holes, but also predicted depth of drilling required. The inventor has sold about ten projects based on these results. Project has been completed.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0147

DOE Coord: J. Aellen

Title: Railroad Switch Heater

Description: The invention is an electric resistance heater for attachment to railroad switches. The heater can be activated to prevent ice and snow from clogging the area where the railroad switch is closed or opened.

Inventor: Henry Keep, Junior  
State : CT

Contact:  
A. D. Barrett, VP

Status: No DOE Support

Status Date: / /

OERI No.: 005692

Patent Status : Patent Applied For  
Development Stage : Limited Production/Marketing  
Technical Category: Transportation Systems, Vehicles & Components

Recv by NIST : 09/04/79  
Recom. by NIST : 07/31/80

Summary: Inventor advised that DOE would decline funding because the proposed testing of a commercially available device was outside this program's area of interest. Quantities of the device have been sold to Amtrak.

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DOE No: 0148

DOE Coord: J. Aellen

Title: Reclamation of Oil and High-Grade Iron Concentrates from Steel Mill Wastes

Description: The invention is a process for steel mills to use in order to recover the energy value of the oil and mill scale from the mill scale produced in rolling mill operations.

Inventor: Leonard A Duval  
State : OH

Contact:  
Leonard A Duval  
Colerapa Industries, Inc  
Box #172  
Aurora OH 44202  
216-562-9822

Status: Complete

Status Date: 03/10/82

OERI No.: 005418

Patent Status : Patent # - 3844943  
Development Stage : Working Model  
Technical Category: Industrial Processes

Recv by NIST : 08/22/79  
Recom. by NIST : 08/15/80  
Award Date : 03/10/82 Award Amount: \$ 99,000 Grant No: FG01-82CE15084  
Contract Period: 03/10/82 - 09/09/82

Summary: In FY 82, a 6-month grant of \$99,000 was awarded to test the Duval millscale deoiling process, using Duval's pilot plant with a design capacity of 2 tons/hr of oily millscale. In FY 84 the inventor reported to NIST that he had achieved commercial success with the first plant being built in Aurora, Ohio. Others were planned for Chicago, Detroit, Pittsburgh and Hamilton, Ontario. An export license was signed with SPEICHIM in Paris that covers Europe, China and the USSR. Negotiations were underway with C. Itoh of Tokyo. Each plant will require \$5 million capital and 35 employees.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0149

DOE Coord: P.M.Hayes

Title: SCOTCH - (Simple, Cost-Effective, Optimum Temperature Control for Housing)

Description: A system to retrofit residential and other steam heating systems to allow zone heating.

Inventor: Ogden H Hammond  
State : MA

Contact:  
Ogden H Hammond

Monument Beach MA 02553  
617-757-8400

Status: Complete

Status Date: 07/28/82

OERI No.: 005610

Patent Status : Not Applied For  
Development Stage : Concept Development  
Technical Category: Buildings, Structures & Components

Recv by NIST : 08/06/79  
Recom. by NIST : 08/18/80  
Award Date : 01/26/81 Award Amount: \$ 91,962 Grant No: FG01-81CS15038  
Contract Period: 01/26/81 - 07/28/82

Summary: A grant of \$91,962 was awarded to design, build and test prototype installations in several residences in the Boston area where steam heated homes are numerous and winters severe. Grant is complete, the company made some sales, and is licensing the control system, which uses house wiring to convey signals.

\*\*\*\*\*

DOE No: 0150

DOE Coord: D.G.Mello

Title: The Use of Solid Waste Material from a Lubricating Oil and/or Vegetable Oil Refining Operation.

Description: The invention involves the use of solid waste material from a lubricating oil and/or vegetable oil refining operation being used as a raw material for a Portland cement plant.

Inventor: Edward W Midlam  
State : LA

Contact:  
Edward W Midlam  
2300 21st Street  
Lake Charles LA 70601  
318-436-6656

Status: Complete

Status Date: 08/06/81

OERI No.: 007141

Patent Status : Disclosure Document Program  
Development Stage : Production Engineering  
Technical Category: Industrial Processes

Recv by NIST : 06/16/80  
Recom. by NIST : 09/30/80  
Award Date : 08/06/81 Award Amount: \$ 64,200 Grant No: FG01-81CS15073  
Contract Period: 08/06/81 - 06/30/83

Summary: A grant of \$64,200 was awarded to investigate one or more specific marketing opportunities. Unfavorable market conditions prevented inventor from pursuing the project further.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0151 DOE Coord: J.Aellen

Title: Film Type Storm Window

Description: A plastic film type of storm window that is tensioned at the corners and sealed on the perimeter to produce a wrinkle free and air tight membrane for window insulation.

Inventor: Yao Tzu Li  
State : MA

Contact:  
SETRA Systems, Inc.

Status: No DOE Support Status Date: / / OERI No.: 005494

Patent Status : Patent # - 4210191  
Development Stage : Concept Development  
Technical Category: Buildings, Structures & Components

Recv by NIST : 07/30/79  
Recom. by NIST : 09/30/80

Summary: Inventor sold Product.

\*\*\*\*\*

DOE No: 0152 DOE Coord: D.G.Mello

Title: Vehicle Exhaust Gas Warm-up System

Description: An accelerated warm-up system for an internal combustion engine which uses the hot exhaust gases to heat the cooling water. Engine cooling water is ducted to a heat exchanger/muffler in the exhaust system during the warm-up period.

Inventor: David S Majkrzak  
State : ND

Contact:  
David S Majkrzak  
345 Cherry Court  
West Fargo ND 58078  
701-282-5593

Status: Complete Status Date: 08/06/83 OERI No.: 006439

Patent Status : Not Applied For  
Development Stage : Prototype Development  
Technical Category: Transportation Systems, Vehicles & Components

Recv by NIST : 02/12/80  
Recom. by NIST : 09/30/80  
Award Date : 08/06/81 Award Amount: \$ 77,500 Grant No: FG01-81CS15063  
Contract Period: 08/06/81 - 08/06/83

Summary: A grant of \$77,500 was awarded to design, build and test a prototype model of the vehicle gas warm-up system. ERIP assistance is complete. Other innovations in this area may have made this invention obsolete.

DOE No: 0153

DOE Coord: D.G.Mello

Title: A New Equipment Design Concept for Storage of Hot Foods

Description: A series of food handling systems designed to reduce heat loss/gain during storage or transport. The basic concept is that of including a heat storage material with the food enclosed in an insulated container to allow the food to stay warm/cool longer.

Inventor: Carl E Pearl  
State : CA

Contact:  
Carl E Pearl

Status: No DOE Support

Status Date: 02/01/83

OERI No.: 005553

Patent Status : Not Applied For  
Development Stage : Concept Development  
Technical Category: Miscellaneous

Recv by NIST : 08/10/79  
Recom. by NIST : 09/30/80

Summary: The inventor has decided to suspend effort on this project in favor of another, more promising invention not supported by ERIP.

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DOE No: 0154

DOE Coord: J.Aellen

Title: Rotating Horsehead for Pumping Units

Description: An ellipsoidal head for an oil well pump beam unit used in sucker-rod pumping. The ellipsoidal head increases the strokes of the sucker-rod over that of the conventional "horse" head and thus causes an increase in flow.

Inventor: Forrest E Chancellor  
State : CA

Contact:  
Forrest E Chancellor

Status: No DOE Support

Status Date: 06/30/86

OERI No.: 005750

Patent Status : Patent # - 4121471  
Development Stage : Limited Production/Marketing  
Technical Category: Fossil Fuels

Recv by NIST : 09/07/79  
Recom. by NIST : 10/29/80

Summary: Needs licensing and marketing assistance.

DOE No: 0155

DOE Coord: J.Aellen

Title: Slip Mining

Description: A method of surface mining coal that involves skidding a series of overburden blocks off the coal. The blocks are buoyantly supported, stabilized and displaced by a dense mud slurry. Slabs of coal uncovered by block movement are floated to the surface of the dense mud and recovered from the surface of the mud filled pit.

Inventor: James M Cleary  
State : MA

Contact:  
James M Cleary  
92 McCallum Drive  
Box #541  
Falmouth MA 02541  
617-548-6686

Status: Complete

Status Date: 12/10/86

OERI No.: 007292

Patent Status : Patent # - 4059309 and others  
Development Stage : Concept Development  
Technical Category: Fossil Fuels

Recv by NIST : 07/23/80  
Recom. by NIST : 10/31/80  
Award Date : 12/10/84 Award Amount: \$109,385 Grant No: FG01-85CE15195  
Contract Period: 12/10/84 - 12/10/86

Summary: A grant of \$109,385 was awarded in three phases to build and field test a prototype slurry trenching machine.

\*\*\*\*\*

DOE No: 0156

DOE Coord: J.Aellen

Title: Direct-Current Electrical Heat-Treatment of Continuous Metal Sheets in a Protective Atmosphere.

Description: A new application of electrical conduction for the continuous heat treatment of rolled steel strip that uses less energy than conventional methods.

Inventor: James J Dolan  
State : FL

Contact:  
James J Dolan  
Twenty-Two Laurel Oak  
Amelia Island FL 32034  
904-261-7571

Status: Complete

Status Date: 07/23/81

OERI No.: 005375

Patent Status : Patent # - 4154432 and others  
Development Stage : Limited Production/Marketing  
Technical Category: Industrial Processes

Recv by NIST : 07/03/79  
Recom. by NIST : 10/31/80  
Award Date : 07/23/81 Award Amount: \$ 99,485 Grant No: FG01-81CS15058  
Contract Period: 07/23/81 - 07/23/82

Summary: A 12-month grant of \$99,485 was awarded to design a plant for Southwest Pipe Company, prepare a design manual, and to collect data on energy savings. Two installations are now running: one in Texas and one in Alabama. Negotiations underway for three more in Indian Steel Mills.

DOE No: 0157

DOE Coord: J.Aellen

Title: Magnaseal Method and Means for Sealing Steel Ingot Casting Molds to Stools

Description: A means of sealing steel ingot casting molds to stools by use of fine metallic particles and an electromagnetic field to emplace the particles.

Inventor: Albert L McQuillen, Jr  
State : PA

Contact:  
Albert L McQuillen, Jr  
1701 Partridge Run Road  
Pittsburgh PA 15241  
412-745-7200

Status: Complete

Status Date: 06/18/81

OERI No.: 005968

Patent Status : Patent # - 3837393  
Development Stage : Prototype Test  
Technical Category: Industrial Processes

Recv by NIST : 11/01/79  
Recom. by NIST : 10/31/80  
Award Date : 06/18/81 Award Amount: \$ 91,202 Grant No: FG01-81CS15051  
Contract Period: 06/18/81 - 12/31/82

Summary: A grant of \$91,202 was awarded to build and install a Magnaseal system in the U. S. Steel plant in Lorrain, Ohio; and to demonstrate and test it.

\*\*\*\*\*

DOE No: 0158

DOE Coord: G.K.Ellis

Title: Energy Conservative Electric Cable System

Description: A low-loss shielded power cable using a naturally cooled sodium conductor and a pressurized gas insulator.

Inventor: Paul F Pugh  
State : CA

Contact:  
Paul F Pugh  
4082 Sequoyah Road  
Oakland CA 94605  
415-638-5015

Status: Complete

Status Date: 12/15/85

OERI No.: 002049

Patent Status : Patent Applied For  
Development Stage : Limited Production/Marketing  
Technical Category: Miscellaneous

Recv by NIST : 04/13/77  
Recom. by NIST : 10/31/80  
Award Date : 09/16/81 Award Amount: \$140,000 Grant No: FG01-81CS15074  
Contract Period: 09/16/81 - 12/15/85

Summary: A grant of \$140,000 was awarded and has been completed, to construct and lay cable from the mainland to Alcatraz Island in San Francisco Bay. Inventor also built and conducted lab tests on high voltage cable for subsequent evaluation by independent third party. Cable has been approved under the National Electric Code. Inventor negotiating with venture capital sources to raise \$4.5 million to build new plant and set up national distribution network.

DOE No: 0159

DOE Coord: J.Aellen

Title: Non-Tubing Type Lift Device, Described as the NTT Rabbit

Description: A gas powered lift device designed to collect oil from low producing (or non-producing) wells. It is a piston device which is lowered inside the oil well casing into the liquid. A pressure operated valve closes, the gas pressure below increases, and the device rises lifting the fluid trapped above.

Inventor: William D Gramling  
State : MD

Contact:  
William D Gramling  
5144 Newport Avenue  
Chevy Chase MD 20016  
301-686-4125

Status: Complete

Status Date: 07/24/81

OERI No.: 005380

Patent Status : Patent # - 4113010 and others  
Development Stage : Prototype Development  
Technical Category: Fossil Fuels

Recv by NIST : 05/07/79  
Recom. by NIST : 11/25/80  
Award Date : 07/24/81 Award Amount: \$ 71,298 Grant No: FG01-81CS15062  
Contract Period: 07/24/81 - 04/24/83

Summary: A grant was awarded to modify, design, install and test the device in several gas/oil wells in Glenville, West Virginia and to investigate and test the feasibility of installing the devices in other areas. After several modifications the unit was tested and operates successfully. However, there appears to be no market for this invention.  
\*\*\*\*\*

DOE No: 0160

DOE Coord: D.G.Mello

Title: High Efficiency Absorption Refrigeration Cycle

Description: An improved absorption refrigeration cycle employing a novel combination of absorbent and refrigerant fluids. Both a simple stage and two-stage cycle system are presented.

Inventor: Leon Lazare  
State : CT

Contact:  
Leon Lazare  
c/o The Puraq Company  
111 Hanna's Road  
Stamford CT 06903  
203-322-4125

Status: Complete

Status Date: 04/30/82

OERI No.: 006900

Patent Status : Not Applied For  
Development Stage : Engineering Design  
Technical Category: Buildings, Structures & Components

Recv by NIST : 05/22/80  
Recom. by NIST : 11/25/80  
Award Date : 04/30/81 Award Amount: \$ 87,537 Grant No: FG01-81CS15046  
Contract Period: 04/30/81 - 04/30/82

Summary: A grant was awarded for a plan for the installation of the system in four chemical plants to demonstrate the technical and economic feasibility of the process when applied to four different, but representative chemical lines. The grant is complete. Best market for the technology was found to be in ammonia plants. Sales have not yet been closed.

DOE No: 0161 DOE Coord: J.Aellen

Title: duPont Connell Energy Coal Gasification Process

Description: A method of making low-to-medium Btu gas from coal is described. A key feature is control of retort heat fluxes.

Inventor: Anthony A duPont  
State : CA

Contact:  
Anthony A duPont  
DuPont Aerospace Company, Inc  
1111 East Wakeham, Suite J  
Santa Ana CA 92705  
714-953-9380

Status: Complete Status Date: 06/30/86 OERI No.: 000854

Patent Status : Patent Applied For  
Development Stage : Working Model  
Technical Category: Fossil Fuels

Recv by NIST : 03/31/76  
Recom. by NIST : 11/28/80  
Award Date : 08/05/81 Award Amount: \$ 98,074 Grant No: FG01-81CS15068  
Contract Period: 08/05/81 - 02/05/83

Summary: A grant of \$98,074 was awarded to design, build, and test a laboratory scale model of the inventor's concept.

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DOE No: 0162 DOE Coord: G.K.Ellis

Title: Tubular Pneumatic Conveyor Pipeline

Description: A pneumatic tubular conveyor pipeline for transporting dry granular materials such as coal, barite or cement over long distances. The pipeline has an outer impervious pipe and an inner porous pipe radially spaced.

Inventor: Lemuel Leslie Ply  
State : TX

Contact:  
Lemuel Leslie Ply  
Ply International, Inc  
Box #899  
Wimberly TX 78676  
512-847-9347

Status: Complete Status Date: 09/30/84 OERI No.: 006992

Patent Status : Patent # - 4116491  
Development Stage : Concept Development  
Technical Category: Industrial Processes

Recv by NIST : 05/23/80  
Recom. by NIST : 11/28/80  
Award Date : 09/30/82 Award Amount: \$ 44,480 Grant No: FG01-82CE15128  
Contract Period: 09/30/82 - 09/30/84

Summary: A grant of \$44,480 was awarded to design, build, and test a prototype section of pipeline using several 10-foot sections of pipe. This project is complete.

DOE No: 0163

DOE Coord: P.M.Hayes

Title: Thermotropic Plastic Films

Description: A thermotropic plastic film which can be formulated to become opaque above a particular temperature. When sealed between two layers of glass it could serve as a window shade for greenhouses or other solar heated structures.

Inventor: Dennis D Howard  
State : PA

Contact:  
Dennis D Howard  
200 West Grandview Boulevard  
Erie PA 16512  
814-868-3611

Status: Complete

Status Date: 07/13/82

OERI No.: 006831

Patent Status : Not Applied For  
Development Stage : Engineering Design  
Technical Category: Buildings, Structures & Components

Recv by NIST : 05/15/80  
Recom. by NIST : 12/04/80  
Award Date : 07/09/81 Award Amount: \$ 99,093 Grant No: FG01-81CS15045  
Contract Period: 07/09/81 - 07/13/82

Summary: A grant awarded to perform research and development leading to a practical design with special attention given to edge sealing and general weather proofing of the laminated panes. The grant is complete; double glass enclosures were found to be too costly. Inventor is using his own funds to develop an embossed plastic seal via small compartments of fluid separated by heat-sealed pattern. Company seeks joint venture and/or licensing.  
\*\*\*\*\*

DOE No: 0164

DOE Coord: J.Aellen

Title: Elastomer Energy Recovery Elements and Vehicle Component Applications

Description: A regenerative braking device, for a small urban automobile, that stores energy during downhill operation for additional acceleration and power when needed with a minimum of fuel consumption. Energy is mechanically stored by an elastomeric storage device.

Inventor: John D Gill  
State : MD

Contact:  
John D Gill  
Elastomer Energy Recovery Inc  
419 Fourth Street  
Annapolis MD 21403  
301-263-5735

Status: Complete

Status Date: 04/15/82

OERI No.: 006433

Patent Status : Disclosure Document Program  
Development Stage : Concept Development  
Technical Category: Transportation Systems, Vehicles & Components

Recv by NIST : 12/12/79  
Recom. by NIST : 12/04/80  
Award Date : 07/09/81 Award Amount: \$ 89,507 Grant No: FG01-81CS15054  
Contract Period: 07/09/81 - 04/15/82

Summary: A grant was awarded to design, build, and test a scale model to determine optimum design after which a full scale model will be built and tested. The grant is complete. Inventor now seeks \$100,000 private sector support to demonstrate proof of concept of a two-person, enclosed, three wheel moped using a small gasoline motor.

DOE No: 0165

DOE Coord: D.G.Mello

Title: Process for Recovering Hydrogen and Elemental Sulfur from Hydrogen Sulfide and/or Mercaptans-Containing Hydrogen

Description: A new process for recovering hydrogen and elemental- sulfur from hydrogen sulfide using iodine slurry

Inventor: Wu-Chi Chen  
State : TX

Contact:  
Wu-Chi Chen  
859 Brittmore Road  
Houston TX 77079  
713-461-6811

Status: Complete

Status Date: 10/29/84

OERI No.: 006985

Patent Status : Patent # - 4066739  
Development Stage : Concept Development  
Technical Category: Fossil Fuels

Recv by NIST : 05/16/80  
Recom. by NIST : 12/29/80  
Award Date : 08/04/81 Award Amount: \$ 70,000 Grant No: FG01-81CS15065  
Contract Period: 08/04/81 - 01/15/83

Summary: A grant of \$70,000 was awarded to investigate the feasibility of the process by performing laboratory and economic studies. Inventor is discussing licensing possibilities with private research corporations. The project is now complete.

\*\*\*\*\*

DOE No: 0166

DOE Coord: J.Aellen

Title: Borehole Angle Control

Description: A modified oil well drill bit which can correct the course of the borehole as the hole is being drilled. It selectively injects cuttings to one side of the drill bit to provide a wedging action between the bit and the borehole.

Inventor: Robert F Evans  
State : TX

Contact:  
Robert F Evans  
Evergreen Drilling Research  
12820 Montford  
Apartment #150  
Dallas TX 75230  
214-943-2181

Status: Complete

Status Date: 11/26/85

OERI No.: 004656

Patent Status : Not Applied For  
Development Stage : Concept Development  
Technical Category: Fossil Fuels

Recv by NIST : 11/27/78  
Recom. by NIST : 12/29/80  
Award Date : 07/28/81 Award Amount: \$ 98,148 Grant No: FG01-81CS15067  
Contract Period: 07/28/81 - 11/26/85

Summary: A grant of \$98,148 was awarded to design, fabricate and conduct field tests on the drill bits and control system.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0167

DOE Coord: J.Aellen

Title: Vaned Pipe for Pipeline Transport of Solids

Description: A slurry pipeline with helical vanes to maintain a rotating motion in the slurry to hold the solids in suspension in the laminar flow range, thus increasing the range of flow rates at which solids can be transported without settling.

Inventor: Edward B Connors  
State : ID

Contact:  
Edward B Connors  
1337 Holman  
Pocatello ID 83201  
208-237-6661

Status: Complete

Status Date: 10/01/83

OERI No.: 006483

Patent Status : Not Applied For  
Development Stage : Engineering Design  
Technical Category: Industrial Processes

Recv by NIST : 02/25/80  
Recom. by NIST : 01/19/81  
Award Date : 08/11/82 Award Amount: \$111,577 Grant No: FG01-82CE15083  
Contract Period: 08/11/82 - 08/30/84

Summary: A grant of \$111,577 was awarded to design, build and test several configurations of the basic idea under various flow conditions with various slurry mixtures. The project was completed on October 1st, 1983.

\*\*\*\*\*

DOE No: 0168

DOE Coord: G.K.Ellis

Title: The Hot Water Saver

Description: Modifications to a residential hot water system so that hot water trapped in the pipes between the water-heater and the point of use is returned to the water heater thus reducing heat loss and water consumption.

Inventor: Spencer Kim Haws  
State : WA

Contact:  
Spencer Kim Haws  
P. O. Box #315  
Mesa WA 99343  
509-265-4327

Status: Complete

Status Date: 10/09/84

OERI No.: 006783

Patent Status : Patent Applied For  
Development Stage : Limited Production/Marketing  
Technical Category: Buildings, Structures & Components

Recv by NIST : 04/07/80  
Recom. by NIST : 01/28/81  
Award Date : 09/30/82 Award Amount: \$ 90,000 Grant No: FG01-82CE15134  
Contract Period: 09/30/82 - 09/29/83

Summary: A grant of \$90,000 was awarded to laboratory and field test the unit, and to document savings and find optimum application. The test results showed 17% of the energy used for water heating could be saved by using this invention. Mr. Haws sold his invention to Metlund Enterprises of Stockton, CA in exchange for royalties. Methlund Enterprises had sold about 400 units as of April, 1986.

DOE No: 0169

DOE Coord: P.M.Hayes

Title: MIRAFOUNT

Description: A cattle waterer which is functional in the coldest climate without the use of an immersed electric or gas heater. It consists of a heavily insulated tank with a floating, insulated cover and a float valve assembly.

Inventor: Mervin W Martin  
State : MO

Contact:  
Carter Thompson

Status: No DOE Support

Status Date: 03/15/85

OERI No.: 006239

Patent Status : Patent # - 3745977  
Development Stage : Limited Production/Marketing  
Technical Category: Industrial Processes

Recv by NIST : 12/27/79  
Recom. by NIST : 01/30/81

Summary: The inventor wanted support for a marketing study, which it is not DOE policy to provide.

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DOE No: 0170

DOE Coord: J.Aellen

Title: Fog System - Low Energy Freeze Protection for Agriculture

Description: A low energy-consuming agricultural freeze protection system using a non-polluting man-made water fog to cover crops and prevent heat loss and freeze damage. The fog system is designed to use significantly less energy than oil-burning agricultural heaters. The inventor has also developed instruments to increase quality of the clouds.

Inventor: Thomas R Mee  
State : CA

Contact:  
Thomas R Mee

Status: No DOE Support

Status Date: 07/09/86

OERI No.: 005622

Patent Status : Patent # - 4039144 and others  
Development Stage : Limited Production/Marketing  
Technical Category: Industrial Processes

Recv by NIST : 08/22/79  
Recom. by NIST : 01/30/81

Summary: Inventor reports net income of \$400,000 in 1984 with gross sales of \$1.9 million. First three months of 1985 have yielded \$700,000 gross. Sales have doubled annually over the last three years. Firm now employs thirty individuals.

DOE No: 0171

DOE Coord: P.M.Hayes

Title: A Method of Preserving Fruits and Vegetables without Refrigeration

Description: A method for preserving fruits and vegetables without refrigeration by using controlled atmosphere packages to keep oxygen levels low and the water vapor and carbon dioxide levels at desired optimums.

Inventor: Karakian Bedrosian  
State : NJ

Contact:  
Karakian Bedrosian  
Sherwood Court  
Alpine NJ 07620  
201-767-3260

Status: Complete

Status Date: 10/31/82

OERI No.: 006950

Patent Status : Patent # - 4079152  
Development Stage : Limited Production/Marketing  
Technical Category: Industrial Processes

Recv by NIST : 04/28/80  
Recom. by NIST : 02/23/81  
Award Date : 08/25/81 Award Amount: \$ 97,300 Grant No: FG01-81CS15061  
Contract Period: 08/25/81 - 10/31/82

Summary: A grant of \$97,300 was awarded to conduct laboratory studies and field trials of various package configurations suitable for shipment of tomatoes by truck from point of growth to point of consumption. Demonstrations were successful. Marketed under the trade name of "TomAHtoes", 751,000 25-pound boxes were shipped in 1987, with \$35 million in retail sales. With its potential for use with other fresh fruits and vegetables, this innovative packaging can provide significant national energy savings.

\*\*\*\*\*

DOE No: 0172

DOE Coord: D.G.Mello

Title: GEM Electrostatic Filtration System

Description: An electrostatic filter for removing suspended particles from fluids such as hydraulic fluids, liquid fuels, engine lubricants and waste oil.

Inventor: Edward A Griswold  
State : CA

Contact:  
Edward A Griswold  
Special Equipment Company  
26022 Cape Drive, #G  
Laguna Niguel CA 92677  
714-581-6730

Status: Complete

Status Date: 09/29/82

OERI No.: 004255

Patent Status : Patent # - 3891528 and others  
Development Stage : Prototype Test  
Technical Category: Industrial Processes

Recv by NIST : 08/03/78  
Recom. by NIST : 02/26/81  
Award Date : 10/01/82 Award Amount: \$ 88,285 Grant No: FG01-83CE15139  
Contract Period: 10/01/82 - 06/30/83

Summary: An 8-month grant of \$88,285 was awarded for demonstration of the GEM filtration system. The unit was designed and installed on several types of diesel engines under controlled conditions. Filtered material was analyzed. ERIP assistance is complete.

DOE No: 0173 DOE Coord: J.Aellen

Title: Thermal Ice Cap

Description: An insulating blanket to reduce refrigeration loads in ice skating rinks during periods of non-use, combined with an advanced method of applying and removing the 17,000 sq. ft of thermal insulation.

Inventor: Bill Burley  
State : PA

Contact:  
Bill Burley  
Peterson Drive  
Johnstown PA 15905  
814-288-1750

Status: Complete Status Date: 08/10/81 OERI No.: 006277

Patent Status : Not Applied For  
Development Stage : Working Model  
Technical Category: Buildings, Structures & Components

Recv by NIST : 01/07/80  
Recom. by NIST : 02/26/81  
Award Date : 08/19/81 Award Amount: \$ 79,726 Grant No: FG01-81CS15066  
Contract Period: 08/19/81 - 05/15/82

Summary: A grant of \$79,726 was awarded to build and test a prototype model of the thermal ice cap, and was successfully completed. Energy savings were experimentally determined to be almost exactly as predicted by NIST analysis. This experimental device is still in use on the Mall in Washington, DC. Inventor seeks opportunities to direct sales.

\*\*\*\*\*

DOE No: 0174 DOE Coord: J.Aellen

Title: Skate on Plastic Ice Skating System

Description: A non-refrigerated plastic skating surface to replace energy intensive ice skating surfaces.

Inventor: E O Nathaniel  
State : MO

Contact:  
Gene Plattner

Status: No DOE Support Status Date: 09/28/81 OERI No.: 006241

Patent Status : Patent # - 4030729  
Development Stage : Limited Production/Marketing  
Technical Category: Buildings, Structures & Components

Recv by NIST : 12/31/79  
Recom. by NIST : 03/05/81

Summary: Invention coordinator and inventor agreed to scope of work for a grant. Prior funding by the Small Business Administration has led to sales of some units. Units were not a commercial success because of perceived "extra skating effort".

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0175

DOE Coord: J.Aellen

Title: A Low-Energy Carpet Backing System

Description: A low energy carpet backing system which uses a hot- melt thermoplastic coating. The hot-melt coating replaces the present latex adhesive coating which locks the tufts or stitches into the primary backing fabric.

Inventor: Den M Acres  
State : GA

Contact:  
W W Seward  
c/o DASH, Inc.  
1303 Dug-Gap Road  
Dalton GA 30720  
404-278-2556

Status: Complete

Status Date: 08/01/81

OERI No.: 006931

Patent Status : Patent Applied For  
Development Stage : Prototype Development  
Technical Category: Industrial Processes

Recv by NIST : 05/05/80  
Recom. by NIST : 03/26/81  
Award Date : 08/01/81 Award Amount: \$ 79,173 Grant No: FG01-81CS15070  
Contract Period: 08/01/81 - 01/31/83

Summary: A grant of \$79,173 was awarded and completed to refit a carpet backing machine with automatic control elements and test on a variety of carpet products. Grantee intends to market the product directly to carpet mills, and predicts an estimated 86% energy savings in manufacture of coated carpeting. Commercial viability of the technology was demonstrated. Inventor is in commercial production. He seeks venture capital assistance.

\*\*\*\*\*

DOE No: 0176

DOE Coord: J.Aellen

Title: Self-Contained, Water Proof, Stoker Fired, Fully Automatic, Portable Solid Fuel Furnaces

Description: An automatically fired portable furnace for burning coal and agricultural waste (e.g. corn, wood waste, poultry manure) for use in drying grain and heating homes and buildings.

Inventor: John D. Finnegan  
State : MN

Contact:  
Dale Flickinger

Status: No DOE Support

Status Date: 06/30/86

OERI No.: 007428

Patent Status : Not Patentable  
Development Stage : Working Model  
Technical Category: Buildings, Structures & Components

Recv by NIST : 08/18/80  
Recom. by NIST : 04/03/81

Summary: DOE found no basis for support.

DOE No: 0177 DOE Coord: D.G.Mello

Title: The Solar I Option

Description: A solar heating system using commercially available collectors and components and a concrete floor slab as a heat storage device and heat exchanger.

Inventor: Robert John Starr  
State : VT

Contact:  
Robert John Starr  
R.F.D.  
Sutton VT 05867  
802-626-8045

Status: Complete Status Date: 08/15/84 OERI No.: 006040

Patent Status : Not Applied For  
Development Stage : Limited Production/Marketing  
Technical Category: Direct Solar

Recv by NIST : 12/03/79  
Recom. by NIST : 05/07/81  
Award Date : 09/24/82 Award Amount: \$ 52,960 Grant No: FG01-82CE15140  
Contract Period: 09/24/82 - 06/30/84

Summary: A grant was awarded to test the effectiveness of a previously installed system. The University of Massachusetts furnished instrumentation, data analysis and computer programs for future design analysis. Energy savings were essentially as predicted. Some sales have been made, but generally "solar" market is slow. This project has been completed.

\*\*\*\*\*

DOE No: 0178 DOE Coord: D.G.Mello

Title: Process and Apparatus for Producing Cellulated Vitreous Refractory Material

Description: A process and apparatus to produce cellular vitreous refractory material in prescribed shapes lighter than conventional brick or tile and more impermeable. The material will have high structural strength and will be highly insulative and light weight.

Inventor: John W North  
State : GA

Contact:  
John W North  
J W North Company  
c/o Silica-North, Ltd.  
P O Box #838  
Tuscombia AL 35674  
205-381-3582

Status: Complete Status Date: 07/23/84 OERI No.: 007726

Patent Status : Patent # - 4212635 and others  
Development Stage : Engineering Design  
Technical Category: Industrial Processes

Recv by NIST : 10/30/80  
Recom. by NIST : 04/15/81  
Award Date : 09/08/82 Award Amount: \$ 94,688 Grant No: FG01-82CE15117  
Contract Period: 09/08/82 - 09/08/83

Summary: A grant was awarded to design, build and operate a pilot plant for manufacture of cell glass building material. There appears to be no market for this product.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0179

DOE Coord: G.K.Ellis

Title: Development and Commercialization of Low Cost, Non- Metallic, Solar Systems

Description: A solar hot water heating system consisting of a non-metallic flat plate solar collector made from ethylene-propylene-diene monomer and non-pressurized thermal storage.

Inventor: Charles E Edwards  
State : MA

Contact:  
Charles E Edwards  
Six Reeves Road  
Bedford MA 01730  
617-458-6463

Status: Complete

Status Date: 01/03/84

OERI No.: 007158

Patent Status : Patent Applied For  
Development Stage : Prototype Development  
Technical Category: Direct Solar

Recv by NIST : 06/19/80  
Recom. by NIST : 04/17/81  
Award Date : 08/17/81 Award Amount: \$ 99,999 Grant No: FG01-81CS15071  
Contract Period: 08/17/81 - 01/03/84

Summary: A grant of \$99,999 was awarded to Solex Corporation to finalize design and manufacturing methods for a low cost solar collector. Prototypes were manufactured and tested for efficiency and weatherability. The inventor got \$500,000 over a 5- year contract in Saudi Arabia. Governments of Saudi Arabia and Jordan have indicated interest in licensing his technology. He has received numerous inquiries about his technology from all over the world.

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DOE No: 0180

DOE Coord: J.Aellen

Title: Adjustable Solar Concentrator (ASC)

Description: A Concentrating Solar Collector using movements and loads on edges of elastic sheets to form cylindrical parabolic reflector.

Inventor: Richard E Dame  
State : MD

Contact:  
Richard E Dame  
10701 Harper Avenue  
Silver Spring MD 20901  
301-681-6903

Status: Complete

Status Date: 08/15/84

OERI No.: 002116

Patent Status : Patent Applied For  
Development Stage : Working Model  
Technical Category: Direct Solar

Recv by NIST : 04/27/77  
Recom. by NIST : 04/20/81  
Award Date : 08/26/81 Award Amount: \$ 97,066 Grant No: FG01-81CS15172  
Contract Period: 08/26/81 - 12/28/83

Summary: A grant of \$97,066 was awarded to develop a fabrication technique for a low-cost, high- performance adjustable concentrating solar collector. Effort successful, but market for medium-temperature collectors is very poor. The project has been completed.

DOE No: 0181 DOE Coord: J.Aellen

Title: The Karlson Ozone Sterilizer

Description: An ozone sterilizer for medical use in both field and hospital. It is low-powered and lightweight. It sterilizes in less than ten minutes, requires no steam and can automatically package sterilized instruments for storage up to several months.

Inventor: Eskill L Karlson  
State : PA

Contact:  
Eskill L Karlson  
4634 State Street  
Erie PA 16509  
814-868-1121

Status: Complete Status Date: 04/27/82 OERI No.: 008061

Patent Status : Patent # - 3719017 and others  
Development Stage : Prototype Development  
Technical Category: Miscellaneous

Recv by NIST : 02/09/81  
Recom. by NIST : 05/29/81  
Award Date : 05/01/82 Award Amount: \$133,304 Grant No: FG01-82CE15082  
Contract Period: 05/01/82 - 05/01/84

Summary: A 24-month grant of \$133,304 was awarded to design, develop, and test the Karlson ozone sterilizer system. Inventor seeks venture capital and/or licensing for third world and other markets. This project has been completed.

\*\*\*\*\*

DOE No: 0182 DOE Coord: J.Aellen

Title: Improved Seal for Geothermal Drill Bit

Description: A new type of sealing arrangement for the cone bearings of a standard rotary drill bit used for geothermal exploration which prolongs the bearing life for a given load and rotary speed.

Inventor: Robert F Evans  
State : CA

Contact:  
Robert F Evans  
Box #62  
La Mirada CA 90637  
213-697-8486

Status: Complete Status Date: 07/09/86 OERI No.: 007089

Patent Status : Patent Applied For  
Development Stage : Concept Development  
Technical Category: Other Natural Sources

Recv by NIST : 06/03/80  
Recom. by NIST : 05/29/81  
Award Date : 09/01/82 Award Amount: \$ 94,898 Grant No: FG01-82CE15104  
Contract Period: 09/01/82 - 08/31/83

Summary: A 12-month grant of \$94,898 was awarded to select by research the best elastomer for use as a bearing seal, and then to test it in the laboratory and in the field. Inventor has made no decision yet on marketing strategy.

DOE No: 0183 DOE Coord: J.Aellen

Title: Increased Vapor Generator Feature for a Reheat Vapor Generator

Description: A method to provide peak power more economically from a base steam/turbine electric plant.

Inventor: E. Stephen Miliaras  
State : MA

Contact:  
E. Stephen Miliaras  
c/o Energotechnology Corp.  
238 Main Street, Suite #514  
Cambridge MA 02142  
617-492-3700

Status: Complete Status Date: 12/31/83 OERI No.: 005961

Patent Status : Patent # - 3826093 and others  
Development Stage : Engineering Design  
Technical Category: Industrial Processes

Recv by NIST : 10/16/79  
Recom. by NIST : 06/18/81  
Award Date : 06/07/82 Award Amount: \$ 98,977 Grant No: FG01-82CE15194  
Contract Period: 06/07/82 - 12/31/83

Summary: A grant of \$98,977 was awarded to design the system for a specific installation that will need increased capacity. For the purpose, negotiations are under way with Southern California Edison. Extensive subcontracting of the installation will be done by Dynatech R & D of Boston. Design completed and 10% capacity increase predicted. Construction awaits SCE needs for additional capacity. The project is completed.

\*\*\*\*\*

DOE No: 0184 DOE Coord: J.Aellen

Title: Coasting Fuel Shutoff

Description: A device suitable for new production or retrofit to turn off the fuel during coasting conditions for automobiles.

Inventor: Nathan Gold  
State : CA

Contact:  
Nathan Gold

Status: No DOE Support Status Date: 06/30/86 OERI No.: 002111

Patent Status : Not Applied For  
Development Stage : Prototype Test  
Technical Category: Combustion Engines & Components

Recv by NIST : 04/27/77  
Recom. by NIST : 06/23/81

Summary: Several contacts have been made with the inventor, none of which elicited a response. Other similar devices are now on the market. Inventor was pursuing licensing agreements

DOE No: 0185 DOE Coord: P.M.Hayes

Title: Insulated Garage Door

Description: An insulated overhead roll-up garage door with special seals to reduce direct heat transmission and infiltration. The door is sectionalized and is comprised of pivotally connected panels each having a cavity filled with insulation.

Inventor: Cecil H Wolf  
State : IL

Contact:  
Charles Bach

Status: No DOE Support Status Date: 03/15/85 OERI No.: 002443

Patent Status : Patent Applied For  
Development Stage : Working Model  
Technical Category: Buildings, Structures & Components

Recv by NIST : 07/11/77  
Recom. by NIST : 07/27/81

Summary: Inventor has yet to furnish an acceptable work proposal to DOE. There is no basis for DOE support. The product is being marketed by Therma-Seal, Inc., 4100-B McDonald Avenue, Des Moines, Iowa - (515) 262-0600.

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DOE No: 0186 DOE Coord: J.Aellen

Title: Oil Recovery by In-Situ Exfoliation Drive

Description: A process for recovering oil in-situ from oil shale which involves alternatively heating and cooling a rubble chamber to exfoliate the crushed rock. The rock releases hydrocarbons which are then pumped to the surface.

Inventor: Sylvain J Pirson  
State : TX

Contact:  
Ronald Hertzfeld

Status: No DOE Support Status Date: 03/15/85 OERI No.: 007361

Patent Status : Disclosure Document Program  
Development Stage : Concept Development  
Technical Category: Fossil Fuels

Recv by NIST : 07/31/80  
Recom. by NIST : 07/28/81

Summary: The inventor has chosen not to pursue this idea at this time, probably because the national interest in shale oil is very low. He is concentrating on #146 which has also been recommended to ERIP.

DOE No: 0187 DOE Coord: G.K.Ellis

Title: Variable Field Induction Motor

Description: A means of controlling the field current in an AC induction motor to improve the efficiency under partial load conditions.

Inventor: Louis W Parker  
State : FL

Contact:  
Rhey Hedges

Status: No DOE Support Status Date: 03/17/85 OERI No.: 003145

Patent Status : Patent Applied For  
Development Stage : Prototype Test  
Technical Category: Miscellaneous

Recv by NIST : 12/07/77  
Recom. by NIST : 08/06/81

Summary: No work proposal was submitted. Technology was licensed to companies in the USA, UK, South Africa and Hong Kong. There is no basis for DOE support.

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DOE No: 0188 DOE Coord: P.M.Hayes

Title: Remote Controlled Underground Mining System for Horizontal or Pitching Seams

Description: A remote controlled underground mining system which uses a unique guidance system for directional drilling of horizontal and pitching seams. Gaseous deposits can be mined without exposure of manpower to hazards.

Inventor: John C Haspert  
State : CA

Contact:  
John C Haspert  
Underground Systems  
P. O. Box #1252  
735 West Duarte Road  
Arcadia CA 91006

Status: Complete Status Date: 11/16/83 OERI No.: 007486

Patent Status : Patent Applied For  
Development Stage : Working Model  
Technical Category: Fossil Fuels

Recv by NIST : 09/08/80  
Recom. by NIST : 08/28/81  
Award Date : 08/16/82 Award Amount: \$ 98,251 Grant No: FG01-82CE15130  
Contract Period: 08/16/82 - 11/16/83

Summary: A grant of \$98,251 was awarded to design special mining equipment, specifying standard parts that are required to build the remote mining system. Grant completed. Designs and drawings submitted to DOE. There is no obvious commercial interest.

DOE No: 0189

DOE Coord: D.G.Mello

Title: Pump Jack

Description: An oil well pumping system in which a hydraulic pump drives a double-acting hydraulic cylinder in an upward motion. During the down-stroke the pressure below the piston is bled through a flow control valve.

Inventor: Gerald Eastman  
State : OK

Contact:  
Gerald Eastman  
P. O. Box #145  
Ochelata OK 74051  
918-535-2393

Status: Complete

Status Date: 12/15/83

OERI No.: 007658

Patent Status : Not Applied For  
Development Stage : Prototype Test  
Technical Category: Miscellaneous

Recv by NIST : 10/10/80  
Recom. by NIST : 08/31/81  
Award Date : 06/15/82 Award Amount: \$ 83,604 Grant No: FG01-82CE15087  
Contract Period: 06/15/82 - 12/15/83

Summary: An grant was awarded to field test and document the results of testing several of these units at varying depths from 2000 to 7000 feet. Rhino Engineering supervised the tests and documented the results. After several failures and corrections, units operated trouble free for 10 months. Medium-sized company seeks license from inventor. This project is complete.

\*\*\*\*\*

DOE No: 0190

DOE Coord: G.K.Ellis

Title: Oxygen-Conducting Material and Oxygen-Sensing Method

Description: An improved oxygen sensing device formed by tape casting an oxygen-conducting material into a dense ceramic body with metal electrodes interdispersed between ceramic layers.

Inventor: W N Lawless  
State : OH

Contact:  
W N Lawless  
Lake Shore Ceramics, Inc  
64 East Walnut Street  
Westerville OH 43081  
614-891-2243

Status: Complete

Status Date: 05/17/83

OERI No.: 007963

Patent Status : Disclosure Document Program  
Development Stage : Engineering Design  
Technical Category: Miscellaneous

Recv by NIST : 01/07/81  
Recom. by NIST : 09/30/81  
Award Date : 05/18/82 Award Amount: \$ 89,076 Grant No: FG01-82CE15098  
Contract Period: 05/18/82 - 05/17/83

Summary: A grant was awarded to fabricate and test several ceramic compositions that will be useful for oxygen sensing and possibly be useful as a fuel cell material. The potential fuel cell application was identified in ERIP's pilot testing of licensing opportunities, the inventor being told that it represented a significant advance in state-of-the-art for fuel cells. Recent tests have confirmed this. This project has been completed.

DOE No: 0191 DOE Coord: G.K.Ellis  
Title: Rotary Heat Pump Air Conditioner, Heater and Ventilator for Automotive, Mobile and Stationary Use.

Description: The invention is an air conditioning unit for mobile or internal stationary application, utilizing waste heat from an internal combustion engine. The refrigeration cycle is a conventional lithium- bromide absorption cycle. Various cycle components are enclosed in a hermetic cylinder, which is rotated by an electric motor. Heat is absorbed or rejected by rotating finned surfaces.

Inventor: Milton Pravda  
State : MD

Contact:  
Gabriel S Joseph, III  
Conserve Resources, Inc  
8416 Stonewall Drive  
Vienna VA 22180

Status: Complete Status Date: 04/07/88 OERI No.: 004890

Patent Status : Patent # - 3740966  
Development Stage : Prototype Test  
Technical Category: Buildings, Structures & Components

Recv by NIST : 02/13/79  
Recom. by NIST : 09/30/81  
Award Date : 05/08/86 Award Amount: \$ 94,171 Grant No: FG01-86CE15266  
Contract Period: 05/08/86 - 04/07/88

Summary: A grant was awarded to modify the heat exchanger part of the heat pump and test it. The results were encouraging. A phase II grant was awarded to have Pacific Northwest Laboratories (PNL) build prototype. A detailed concept evaluation and a sensitivity assessment of the inventor's earlier design analysis was initiated before building the prototype. Manco Corp. sold the invention to CRI.

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DOE No: 0192 DOE Coord: D.G.Mello  
Title: Closed Cycle Dehumidification Clothes Dryer

Description: A clothes dryer that uses a vapor compression refrigeration cycle to dehumidify the air that passes through the dryer. Air temperature will gradually increase as the condenser restores heat lost to the evaporator and adds energy introduced into the refrigerant by the compressor.

Inventor: Donald C Lewis  
State : ME

Contact:  
Donald C Lewis  
P. O. Box #1107  
Bangor ME 04401  
800-648-9200

Status: Complete Status Date: 06/15/83 OERI No.: 007943

Patent Status : Not Applied For  
Development Stage : Concept Development  
Technical Category: Miscellaneous

Recv by NIST : 12/30/80  
Recom. by NIST : 10/07/81  
Award Date : 07/16/82 Award Amount: \$ 81,648 Grant No: FG01-82CE15100  
Contract Period: 07/16/82 - 06/15/83

Summary: An grant was awarded to design, construct and test the clothes dryer. Preliminary tests of the unit, which operates at 115v, show 65- 70 percent energy savings over the conventional dryer. Inventor expects profitable operation at 1% of total dryer market, and is looking for licensing opportunities with eventual sell-out if market share expands.

DOE No: 0193

DOE Coord: J.Aellen

Title: Engine Heating Device

Description: A truck diesel engine heater (Heat-exchanger/heat- sink) which stores heat from the exhaust for later use in warming a cold engine prior to startup. Crankcase oil or engine coolant is circulated through the heat exchanger and engine for warmup.

Inventor: Nicholas Archer Sanders  
State : VT

Contact:  
Nicholas Archer Sanders  
Weatherready, Incorporated  
Eleven Green Ridge Road  
Route One, Box #175  
Norwich VT 05055  
603-643-4351

Status: Complete

Status Date: 09/30/83

OERI No.: 006928

Patent Status : Patent Applied For  
Development Stage : Concept Development  
Technical Category: Transportation Systems, Vehicles & Components

Recv by NIST : 05/07/80  
Recom. by NIST : 10/30/81  
Award Date : 09/30/82 Award Amount: \$ 91,150 Grant No: FG01-82CE15141  
Contract Period: 09/30/82 - 09/30/83

Summary: A 12-month grant of \$91,150 was awarded to construct and test a prototype unit. Results of testing showed large energy savings, but equipment cost needs to be reduced. Marketing proceeding: Honeywell, State of Minnesota and US Army are among interested parties.

\*\*\*\*\*

DOE No: 0194

DOE Coord: J.Aellen

Title: Radiant Energy Power Source for Jet Aircraft

Description: Installation of photovoltaic cells in proximity to the liner of a jet engine combustion chamber to generate electrical power for replacing aircraft primary - and/or auxiliary-power units.

Inventor: Oscar Leonard Doellner  
State : AZ

Contact:  
Oscar Leonard Doellner  
1943 South Plumer Avenue  
Tucson AZ 85713  
602-623-7303

Status: Complete

Status Date: 09/28/87

OERI No.: 005673

Patent Status : Patent # - 4090359  
Development Stage : Concept Development  
Technical Category: Transportation Systems, Vehicles & Components

Recv by NIST : 08/30/79  
Recom. by NIST : 11/12/81  
Award Date : 09/20/82 Award Amount: \$ 65,000 Grant No: FG01-82CE15144  
Contract Period: 09/20/82 - 09/28/87

Summary: A phase one grant was awarded for ground tests on the J-85 engine to determine if sufficient radiant energy is available to power photovoltaic cells. A phase two grant package was used to build and test the hardware to harness radiant energy from a jet engine.

DOE No: 0195 DOE Coord: J.Aellen

Title: Proportional Current Battery

Description: A proportional current electric storage battery with tapered plate thickness that can maintain high current drain and charging rates with minimal material and weight.

Inventor: Edward L Barrett  
State : IL

Contact:  
Mark Pridmore  
27 Elder Lane  
La Grange IL 60525  
312-579-5287

Status: Complete Status Date: 07/09/86 OERI No.: 007280

Patent Status : Patent # - 3846174  
Development Stage : Concept Development  
Technical Category: Miscellaneous

Recv by NIST : 07/14/80  
Recom. by NIST : 11/13/81  
Award Date : 09/15/82 Award Amount: \$ 87,757 Grant No: FG01-82CE15103  
Contract Period: 09/15/82 - 01/15/84

Summary: A grant of \$87,757 was awarded to build and test a working model of the tapered plate battery. The inventor has no plans yet for marketing. Awaiting final report.

\*\*\*\*\*

DOE No: 0196 DOE Coord: J.Aellen

Title: Manufacturing and Using Nitrogen Fertilizer Solutions on a Farm

Description: The continuous manufacture, on a farm, of nitrogenous fertilizer by the reaction of nitrogen dioxide with water to produce nitric acid which is neutralized to ammonium nitrate or other nitrogenous compounds that can be applied to a field by way of an irrigation system.

Inventor: John A Eastin  
State : NE

Contact:  
John A Eastin  
P O Box #30327  
Lincoln NE 68509  
402-467-2508

Status: Complete Status Date: 08/31/82 OERI No.: 000461

Patent Status : Patent Applied For  
Development Stage : Prototype Test  
Technical Category: Industrial Processes

Recv by NIST : 12/05/75  
Recom. by NIST : 12/23/81  
Award Date : 08/31/82 Award Amount: \$ 99,592 Grant No: FG01-82CE15142  
Contract Period: 08/31/82 - 08/31/83

Summary: A 12-month grant of \$99,592 was awarded to construct and test a prototype integrated unit, and measure its efficiency. Grantee plans to manufacture and sell units if process is successful. Farm co-ops will produce fertilizer, thus diversifying the process and reducing costs of transportation and storage. This project has been completed.

DOE No: 0197

DOE Coord: D.G.Mello

Title: Frequency Regulator and Protective Devices for Synchronous Generators

Description: A solid-state frequency controller and protective device for small scale synchronous generators used for isolated power generation such as hydroelectric generation.

Inventor: Robert F Karlicek  
State : CA

Contact:  
Robert F Karlicek  
Edison Engineering  
1920 Camino Centraloma  
Fullerton CA 92633  
818-302-4331

Status: Complete

Status Date: 09/15/82

OERI No.: 007086

Patent Status : Patent Applied For  
Development Stage : Prototype Test  
Technical Category: Other Natural Sources

Recv by NIST : 06/03/80

Recom. by NIST : 12/28/81

Award Date : 09/20/82 Award Amount: \$ 65,990 Grant No: FG01-82CE15132

Contract Period: 09/20/82 - 09/20/83

Summary: A 12-month grant of \$65,990 was awarded to build, test and develop a solid state frequency controller and protective device for small scale synchronous generators of three sizes: 5,100 and 150kw. ERIP assistance is complete. No further report is available.

\*\*\*\*\*

DOE No: 0198

DOE Coord: J.Aellen

Title: The Thermatreat System

Description: An on-site aerobic sewage treatment plant for home use which recovers heat for space and water heating.

Inventor: Robert H Nealy  
State : PA

Contact:  
Robert H Nealy

Status: No DOE Support

Status Date: 06/30/86

OERI No.: 005281

Patent Status : Patent # -  
Development Stage : Engineering Design  
Technical Category: Industrial Processes

Recv by NIST : 06/06/79

Recom. by NIST : 12/30/81

Summary: Recommendation under consideration by DOE, with some further need for negotiation indicated. Inventor seeks \$500,000 for R & D, and invention is in the concept stage. DOE action in abeyance in FY 84 pending inventor obtaining SEC approved prospectus.

DOE No: 0199

DOE Coord: J.Aellen

Title: Rotary Coal Combustor and Heat Exchangers

Description: A rotary multi-fuel fluidized-bed-combustor and heat exchanger that can be used in parallel with steam turbines for power generation or to provide a pressurized clean gas for use with high temperature gas turbines.

Inventor: John Hunter  
Country : Scotland

Contact:  
Edward Levi  
Lehigh University  
Energy Research Center  
440 Broadhead Avenue  
Bethlehem PA 18015  
215-861-4090

Status: Complete

Status Date: 06/30/87

OERI No.: 007718

Patent Status : Patent # - 1521088 and others  
Development Stage : Engineering Design  
Technical Category: Buildings, Structures & Components

Recv by NIST : 10/24/80  
Recom. by NIST : 01/18/82  
Award Date : 08/16/85 Award Amount: \$ 63,847 Grant No: FG01-85CE15242  
Contract Period: 08/16/85 - 06/30/87

Summary: A grant of \$63,847 was awarded on August 16, 1985, to Lehigh University to perform engineering analysis on Mr. Hunter's combustor/Gasifier. Designs will be prepared and economic analysis will be performed. The proposed combustor/Gasifier will be compared with state-of-the-art units.

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DOE No: 0200

DOE Coord: J.Aellen

Title: Removal of Sulfur Dioxide from the Stack Gas of Combustors Burning High Sulfur Fuel

Description: A process for removing sulfur dioxide from flue gasses and converting sulfur dioxide to elemental sulfur.

Inventor: Shao-E Tung  
State : MA

Contact:  
Shao-E Tung  
Ninety-One Blake Road  
Brookline MA 02146  
617-923-4032

Status: Complete

Status Date: 02/10/84

OERI No.: 007385

Patent Status : Patent # - 4324775 and others  
Development Stage : Engineering Design  
Technical Category: Industrial Processes

Recv by NIST : 08/08/80  
Recom. by NIST : 01/27/82  
Award Date : 08/10/82 Award Amount: \$ 99,820 Grant No: FG01-82CE15125  
Contract Period: 08/10/82 - 02/10/84

Summary: An 18 month R & D contract of \$99,820 was awarded to obtain laboratory data on equilibrium and rates, upon which the absorption/stripping portion of the invention is based. The possibility exists for follow-on investment by the Peoples' Republic of China. Inventor seeks licensing opportunities.

DOE No: 0201

DOE Coord: D.G.Mello

Title: Hydraulic, Variable, Engine Valve Actuation System

Description: A modified hydraulic valve lifter which provides a means to vary valve timing and lift to improve fuel economy and reduce emissions. The device is actuated by engine oil pressure and is controlled by manifold vacuum in response to engine demand.

Inventor: Louis A Hausknecht  
State : OH

Contact:  
Louis A Hausknecht  
4504 State Road  
Cleveland OH 44109  
216-749-1686

Status: Complete

Status Date: 12/31/84

OERI No.: 006680

Patent Status : Patent # - 4153016 and others

Development Stage : Working Model

Technical Category: Transportation Systems, Vehicles &amp; Components

Recv by NIST : 03/31/80

Recom. by NIST : 02/26/82

Award Date : 08/27/82 Award Amount: \$ 85,060 Grant No: FG01-82CE15137

Contract Period: 08/27/82 - 08/27/83

Summary: A 12-month grant of \$85,060 was awarded for the design, assembly and testing of a prototype hydraulic variable valve actuating system to be used in automobile engines.

\*\*\*\*\*

DOE No: 0202

DOE Coord: D.G.Mello

Title: Wobbling Type Distillation Apparatus

Description: A multiple-effect vacuum distillation system employing sets of wobbling tubes to produce a thin liquid film thereby improving the evaporation efficiency.

Inventor: Yao Tzu Li  
State : MA

Contact:  
Yao Tzu Li  
Huckleberry Hill  
Lincoln MA 01773  
617-259-9592

Status: Complete

Status Date: 09/16/83

OERI No.: 005495

Patent Status : Patent Applied For

Development Stage : Working Model

Technical Category: Miscellaneous

Recv by NIST : 07/30/79

Recom. by NIST : 03/31/82

Award Date : 09/17/82 Award Amount: \$ 99,880 Grant No: FG01-82CE15129

Contract Period: 09/17/82 - 09/16/83

Summary: A grant of \$99,880 was awarded to design, build and test a prototype distillation device capable of 25 gallons/minute throughput. The inventor is seeking licenses or capital to build and market his machine.

DOE No: 0203

DOE Coord: G.K.Ellis

Title: Microwave Methods and Apparatus for Paving and Paving Maintenance

Description: A method to repave asphalt roads in place using recycled material and microwave heating.

Inventor: Morris R Jeppson  
State : CA

Contact:  
Morris R Jeppson  
Box #221489  
Carmel CA 93922  
408-624-3152

Status: Complete

Status Date: 12/21/84

OERI No.: 005898

Patent Status : Patent # - 4319856 and others  
Development Stage : Working Model  
Technical Category: Industrial Processes

Recv by NIST : 10/02/79  
Recom. by NIST : 04/28/82  
Award Date : 09/22/82 Award Amount: \$ 52,000 Grant No: FG01-84CE15173  
Contract Period: 09/22/82 - 12/21/84

Summary: A grant for \$52,000 was awarded on December 12, 1984 to design a prototype machine. The inventor prepared a design for a full-scale automatic paving machine. He has a smaller prototype which appears to perform well. He is seeking capital or an industrial partner to build a full-scale prototype of his machine. He has received numerous inquiries about his machine from prospective users.

\*\*\*\*\*

DOE No: 0204

DOE Coord: D.G.Mello

Title: The Induction Propeller

Description: An induction propeller for ship propulsion designed to include forward hydrodynamic rake for increased mass flow and higher efficiency.

Inventor: Raymond P Holland Jr  
State : NM

Contact:  
Raymond P Holland Jr

Status: No DOE Support

Status Date: 11/10/82

OERI No.: 003872

Patent Status : Patent # - 3226031  
Development Stage : Prototype Development  
Technical Category: Transportation Systems, Vehicles & Components

Recv by NIST : 04/11/78  
Recom. by NIST : 04/29/82

Summary: Inventor has abandoned this project in favor of another more promising invention not being supported by ERIP.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0205 DOE Coord: J.Aellen

Title: Energy Efficient Solid State Multiple Operator Metallic Arc Welding System

Description: A system for distributing and controlling AC electric power for metal arc welding to multiple welding stations.

Inventor: Charles B James  
State : MO

Contact:  
Mister Raymo

Status: No DOE Support Status Date: 06/09/83 OERI No.: 007178

Patent Status : Disclosure Document Program  
Development Stage : Engineering Design  
Technical Category: Industrial Processes

Recv by NIST : 06/26/80  
Recom. by NIST : 05/21/82

Summary: Declined DOE assistance.

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DOE No: 0206 DOE Coord: D.G.Mello

Title: Method and Apparatus for High Efficiency Operation of Electromechanical Energy Conversion

Description: An electrical controller for a separately-excited (shunt) DC motor which optimizes the ratio of armature and field currents to achieve minimum electrical I-squared-R losses for any load conditions.

Inventor: Jonathan Gabel  
State : CA

Contact:  
Jonathan Gabel  
5800 Ocean View Drive  
Oakland CA 94618  
415-653-8879

Status: Complete Status Date: 10/30/86 OERI No.: 007962

Patent Status : Patent Applied For  
Development Stage : Working Model  
Technical Category: Combustion Engines & Components

Recv by NIST : 01/07/81  
Recom. by NIST : 05/26/82  
Award Date : 04/08/85 Award Amount: \$ 49,500 Grant No: FG01-85CE15159  
Contract Period: 04/08/85 - 04/07/86

Summary: A grant of \$49,500 was awarded on April 8, 1985 to build and test a prototype. Grantee completed design of unit, but installation and testing of prototype will be done with private funds. There is no present plan to distribute the device.

DOE No: 0207

DOE Coord: J.Aellen

Title: Glass Sheet Manufacturing Method and Apparatus

Description: A glass manufacturing process and apparatus having a vertical air-cooled electric furnace and transverse air-cooled refiner section. The furnace melts glass by passing an electric current through the composition and thus eliminates the emission of hot spent gasses that normally results from gas-fired furnaces.

Inventor: Frank L Anderson  
State : WV

Contact:  
Frank L Anderson

Status: No DOE Support      Status Date: 09/30/90      OERI No.: 008441

Patent Status : Patent # - 4162907  
Development Stage : Concept Development  
Technical Category: Industrial Processes

Recv by NIST : 06/15/81  
Recom. by NIST : 06/23/82

Summary: No DOE support.

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DOE No: 0208

DOE Coord: D.G.Mello

Title: CNG Automotive Fuel Cylinders/Gas Transport Modules

Description: A lightweight aluminum gas transport vessel for storing compressed natural gas to fuel light transportation vehicles.

Inventor: Norman C Fawley  
State : CA

Contact:  
Norman C Fawley  
NCF Industries  
2320 Cherry Industrial Circle  
Long Beach CA 90805  
213-630-5768

Status: Complete      Status Date: 12/31/85      OERI No.: 008406

Patent Status : Patent Applied For  
Development Stage : Prototype Test  
Technical Category: Fossil Fuels

Recv by NIST : 06/01/81  
Recom. by NIST : 06/23/82  
Award Date : 09/15/84      Award Amount: \$ 50,000      Grant No: FG01-84CE15196  
Contract Period: 09/15/84 - 07/15/85

Summary: An award of \$50,000 was made to pressure test the inventor's transport module. Grantee successfully completed all tests; sold rights to major manufacturer of gas cylinders.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0209

DOE Coord: A.R.Barnes

Title: Reclaiming Process for Resin Treated Fiberglass

Description: A process for reclaiming fiberglass from waste material for use as insulation by separating it from the urea-formaldehyde resin coating with which it is impregnated during manufacture.

Inventor: John W Yount  
State : NC

Contact:  
John W Yount  
P O Box #7  
Bullock NC 27507  
919-693-4839

Status: Complete Status Date: 10/30/86 OERI No.: 007861

Patent Status : Patent Applied For  
Development Stage : Production Engineering  
Technical Category: Buildings, Structures & Components

Recv by NIST : 12/03/80  
Recom. by NIST : 06/28/82  
Award Date : 04/04/84 Award Amount: \$ 50,000 Grant No: FG01-84CE15174  
Contract Period: 04/04/84 - 01/02/86

Summary: A grant of \$50,000 was authorized on April 4th, 1984, for building and testing a fiberglass reclaiming machine. Inventor terminated grant during performance due to problems with sub- contractor.

\*\*\*\*\*

DOE No: 0210

DOE Coord: G.K. Ellis

Title: Ultra High Speed Drilling Device for Use in Hard Rock Formations

Description: A diamond cutting disk which is rotated at high linear velocities by twin downhole turbines to drill hard rock formations for deep oil recovery.

Inventor: Lloyd Flatland  
State : CA

Contact:  
Lloyd Flatland  
Lloyd Flatland Dental Products  
496 "B" Street  
San Rafael CA 94901  
415-457-5790

Status: Complete Status Date: 09/30/88 OERI No.: 007631

Patent Status : Disclosure Document Program  
Development Stage : Prototype Test  
Technical Category: Fossil Fuels

Recv by NIST : 10/03/80  
Recom. by NIST : 06/29/82  
Award Date : 09/30/86 Award Amount: \$ 96,000 Grant No: FG01-84CE15185  
Contract Period: 09/30/86 - 09/30/88

Summary: A phase I grant of \$46,000 was awarded On August 28, 1984, to build and test a prototype high-speed drill. Suitability to drill hard rock will be determined. Phase I has been successfully completed. A phase II grant of \$50,000 was awarded on November 4th, 1985 for further development and has been completed. However, some difficulties were encountered, and the inventor seeks additional development funds.

DOE No: 0211 DOE Coord: J.Aellen

Title: Shock Mounted Stratapax Bit

Description: An oil well drilling bit to support polycrystalline diamond cutters. It is designed with concentric spring tempered steel rings containing helical slots.

Inventor: Robert F Evans  
State : TX

Contact:  
Robert F Evans  
P O Box #45674  
Dallas TX 75235  
214-351-6487

Status: Complete Status Date: 06/30/86 OERI No.: 007918

Patent Status : Patent Applied For  
Development Stage : Concept Definition  
Technical Category: Fossil Fuels

Recv by NIST : 12/18/80  
Recom. by NIST : 06/29/82  
Award Date : 09/24/82 Award Amount: \$ 57,545 Grant No: FG01-82CE15149  
Contract Period: 09/24/82 - 02/28/84

Summary: A grant of \$57,545 was awarded for the grantee to design, fabricate and test, four variations of the invention.

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DOE No: 0212 DOE Coord: G.K.Ellis

Title: Water Warden

Description: A plastic disc about two inches in diameter that installs in a commercial type of toilet water control valve to reduce the flushing cycle.

Inventor: Louis E Govear  
State : CA

Contact:  
Hugh Huislander

Status: Other Assistance Status Date: 09/30/82 OERI No.: 008517

Patent Status : Patent # - 4202525  
Development Stage : Production & Marketing  
Technical Category: Buildings, Structures & Components

Recv by NIST : 06/14/81  
Recom. by NIST : 06/30/82

Summary: Inventor requested assistance in marketing his invention in the Federal sector. A DOE letter of introduction and a listing of States' contacts has been provided.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0213 DOE Coord: G.K. Ellis

Title: The Kaunitz Process for Welding Pipe

Description: A pipe joining process particularly for large transmission pipelines that involves expanding and machining each end and then aligning both sections axially and radially prior to welding.

Inventor: Clyde F Kaunitz  
State : MI

Contact:  
Clyde F Kaunitz  
2339 Bay Woods Court  
Bay City MI 48706  
517-684-7354

Status: Complete Status Date: 08/06/87 OERI No.: 008110

Patent Status : Not Applied For  
Development Stage : Engineering Design  
Technical Category: Industrial Processes

Recv by NIST : 02/20/81  
Recom. by NIST : 06/30/82  
Award Date : 06/11/86 Award Amount: \$ 49,975 Grant No: FG01-86CE15267  
Contract Period: 06/11/86 - 03/11/87

Summary: A grant of \$49,975 was awarded on June 11th, 1986 to build and test a prototype. The device was built by CRC-Evans in Tulsa, and reportedly was successfully tested.

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DOE No: 0214 DOE Coord: G.K.Ellis

Title: Convertible Flat/Drop Trailer

Description: A removable bed trailer, constructed in three sections, that enables a single unit to function as a flat-bed trailer, drop-center trailer or a detachable-neck light-duty trailer.

Inventor: Donald E Wise  
State : OR

Contact:  
Donald E Wise  
5119 Jasper  
Springfield OR 97447  
503-747-9255

Status: Complete Status Date: 07/15/86 OERI No.: 008723

Patent Status : Patent # - 4290642  
Development Stage : Production Engineering  
Technical Category: Transportation Systems, Vehicles & Components

Recv by NIST : 11/02/81  
Recom. by NIST : 07/29/82  
Award Date : 09/18/84 Award Amount: \$ 63,069 Grant No: FG01-84CE15175  
Contract Period: 09/18/84 - 12/15/85

Summary: A grant of \$63,069 was awarded on September 18, 1984 to build and test a prototype convertible trailer to determine fuel savings. The inventor has licensed his technology to Trail King Company in Nebraska.

DOE No: 0215 DOE Coord: G.K.Ellis

Title: Slag Waste Heat Boiler

Description: A slag waste heat boiler which produces wet steam from steel plant heat during the steel making process. Molten slag, a by-product, is poured over water-filled rotating cylinders. Steam is formed inside the cylinders and the solidified slag is scraped from the cylinders.

Inventor: Richard Jablin  
State : NC

Contact:  
Richard Jablin  
2511 Woodrow Street  
Durham NC 27705  
919-286-4693

Status: Complete Status Date: 06/11/87 OERI No.: 002333

Patent Status : Patent Applied For  
Development Stage : Concept Development  
Technical Category: Industrial Processes

Recv by NIST : 06/07/77  
Recom. by NIST : 06/29/82  
Award Date : 06/11/86 Award Amount: \$ 50,000 Grant No: FG01-86CE15264  
Contract Period: 06/11/86 - 06/11/87

Summary: A grant was awarded to support the inventor in marketing the technology as part of an EPA SBIR Phase II project. The deal the inventor anticipated did not materialize. Currently, he is seeking a steel company who would be interested in building the unit on their site. ERIP has referred him to CE's Improved Energy Productivity Division for possible assistance.

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DOE No: 0216 DOE Coord: D.G.Mello

Title: Method and Assembly for Mounting a Semiconductor Element

Description: A method of packaging semiconductor wafers to achieve double-sided cooling of the wafer without clamps, springs or studs; power semi-conductors, such as used in motor controllers, can thus operate at higher current levels.

Inventor: Richard F Kiley  
State : MA

Contact:  
Richard F Kiley  
Thermal Associates Inc  
197 Main Street, P O Box #248  
North Reading MA 01864  
617-664-3342

Status: Complete Status Date: 12/31/85 OERI No.: 008499

Patent Status : Patent Applied For  
Development Stage : Limited Production/Marketing  
Technical Category: Combustion Engines & Components

Recv by NIST : 07/07/81  
Recom. by NIST : 07/30/82  
Award Date : 09/20/84 Award Amount: \$ 53,900 Grant No: FG01-84SE15199  
Contract Period: 09/20/84 - 09/20/85

Summary: A grant was awarded to build and test prototype semiconductor elements. Market conditions precluded grantee from developing viable market plans for the product.

DOE No: 0217

DOE Coord: J.Aellen

Title: Jointless Advanced Composite Material Tape for Operating Lift Pumps in Oil Wells

Description: A jointless composite material tape (ribbon rod) made from carbon fibers, epoxy and fiber tape for use in place of steel sucker rods normally used in conjunction with beam pumping of oil wells.

Inventor: Curtis J Tanner  
State : CA

Contact:  
H N Hensley  
2010 Princeton  
Midland TX 79701  
915-683-3534

Status: Complete

Status Date: 10/16/88

OERI No.: 008074

Patent Status : Disclosure Document Program  
Development Stage : Prototype Test  
Technical Category: Fossil Fuels

Recv by NIST : 02/12/81  
Recom. by NIST : 07/30/82  
Award Date : 04/17/87 Award Amount: \$ 82,742 Grant No: FG01-87CE15122  
Contract Period: 04/17/87 - 10/16/88

Summary: A grant of \$82,742 was awarded on April fourteenth, 1987, to construct and test the product.

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DOE No: 0218

DOE Coord: G.K.Ellis

Title: Behemoth

Description: An apparatus and process for reclaiming waste oil at drilling sites by separating water and solids. Solids and water can be returned to the site and land restored to its natural state.

Inventor: Wilford Dean Tannehill  
State : TX

Contact:  
Wilford Dean Tannehill

Status: Other Assistance

Status Date: 09/17/85

OERI No.: 008950

Patent Status : Patent Applied For  
Development Stage : Production & Marketing  
Technical Category: Industrial Processes

Recv by NIST : 03/17/82  
Recom. by NIST : 07/30/82

Summary: The inventor is looking for a licensee or buyer of his invention.

DOE No: 0219

DOE Coord: J.Aellen

Title: Method for Making Acetaldehyde from Ethanol

Description: A process to convert low proof ethanol directly to anhydrous acetaldehyde by an electrogenerative conversion process using fuel cell technology. During the conversion heat and electricity are produced.

Inventor: Thomas M Meshbeshier  
State : DE

Contact:  
Thomas M Meshbeshier  
4507 Weldin Road  
Wilmington DE 19899  
302-658-9141

Status: Complete

Status Date: 06/30/86

OERI No.: 008054

Patent Status : Patent Applied For  
Development Stage : Laboratory Test  
Technical Category: Combustion Engines & Components

Recv by NIST : 02/05/81  
Recom. by NIST : 07/30/82  
Award Date : 09/18/84 Award Amount: \$ 49,983 Grant No: FG01-84CE15191  
Contract Period: 09/18/84 - 09/18/85

Summary: A grant of \$49,983 was awarded to perform an economic study and mineral lab work to determine the most efficient conditions for converting ethanol into acetaldehyde and electricity.

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DOE No: 0220

DOE Coord: D.G.Mello

Title: Deep Throat Resistance Welder

Description: A high-frequency spot-welding system which permits relatively small and flexible power cabling between the gun and the power source as compared with the heavy cabling required of either 60-hertz or DC systems. This allows a greater proportion of the power-line energy being transferred to the weld rather than dissipated in the system conductors.

Inventor: Charles A Schwartz  
State : OH

Contact:  
Charles A Schwartz  
24545 Bryden Road  
Beachwood OH 44122  
216-831-3099

Status: Complete

Status Date: 08/31/85

OERI No.: 007767

Patent Status : Patent Applied For  
Development Stage : Prototype Test  
Technical Category: Industrial Processes

Recv by NIST : 11/04/80  
Recom. by NIST : 08/30/82  
Award Date : 09/19/84 Award Amount: \$ 45,920 Grant No: FG01-84CE15192  
Contract Period: 09/19/84 - 09/18/85

Summary: A grant of \$45,920 was awarded on September 14, 1984 to build and test a prototype. The tests confirmed theoretical analysis showing the merits of the new system. Grantee attempting licensing of product.

DOE No: 0221 DOE Coord: J.Aellen

Title: Strainercycle

Description: A means for providing cooling in a building, when the outside temperature drops below 65 degrees Fahrenheit, by injecting strained cooling tower water into chilled water circuits in order to eliminate the use of mechanical refrigeration during this time.

Inventor: Rudolf O Iverson  
State : NY

Contact:  
Paul Ginouves

Status: Other Assistance Status Date: 09/23/82 OERI No.: 008964

Patent Status : Patent # - 3995443  
Development Stage : Production & Marketing  
Technical Category: Buildings, Structures & Components

Recv by NIST : 03/25/82  
Recom. by NIST : 09/13/82

Summary: ERIIP identified government market for inventor.

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DOE NO: 0222 DOE Coord: D.G.Mello

Title: Louver Trombe Solar Storage Unit

Description: A jalousie shutter, Trombe-type, phase change storage unit. Each shutter is prism shaped and exposes, alternately, a transmission, absorption or combination, side toward the sun.

Inventor: Donald R Thomas  
State : VT

Contact:  
Donald R Thomas

Status: Other Assistance Status Date: 09/30/83 OERI No.: 007979

Patent Status : Not Applied For  
Development Stage : Laboratory Test  
Technical Category: Direct Solar

Recv by NIST : 01/15/81  
Recom. by NIST : 10/07/82

Summary: ERIIP assistance has been completed. Referred to National Appropriate Technology Assistance Service (NATAS) for assistance.

DOE No: 0223 DOE Coord: J.Aellen

Title: Minimizing Subsidence Effects during Production of Coal In Situ

Description: The invention is a process for using a foaming mud cement to prevent or minimize subsidence in underground gasification sites.

Inventor: Ruel Carlton Terry  
State : OK

Contact:  
Ruel Carlton Terry  
2235 Northwest 55th Street  
Oklahoma City OK 73112  
405-840-9586

Status: Complete Status Date: 06/30/86 OERI No.: 008456

Patent Status : Patent Applied For  
Development Stage : Concept Development  
Technical Category: Fossil Fuels

Recv by NIST : 06/17/81  
Recom. by NIST : 10/14/82  
Award Date : 04/04/84 Award Amount: \$ 53,964 Grant No: FG01-84CE15169  
Contract Period: 04/04/84 - 01/31/85

Summary: A grant of \$53,964 was awarded to perform lab work. Follow-up funding of \$248,000 was received from the state of Wyoming using funds provided by the Department of Interior. \$60,000 for additional R&D has since been awarded by the US Bureau of Mines.

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DOE No: 0224 DOE Coord: J.Aellen

Title: Haile Alternate Fuel Grain Dryer

Description: This is a design for a grain dryer which is capable of using grain dust collected from grain elevators as an alternate fuel.

Inventor: Jack D Haile  
State : NE

Contact:  
Gwyer Grimminger, Presiden  
COMET, Inc  
3221 Ramada Road  
Grand Island NE 68801  
308-381-2990

Status: Complete Status Date: 06/30/86 OERI No.: 006782

Patent Status : Patent Applied For  
Development Stage : Engineering Design  
Technical Category: Industrial Processes

Recv by NIST : 04/09/80  
Recom. by NIST : 10/14/82  
Award Date : 06/01/84 Award Amount: \$ 50,000 Grant No: FG01-84CE15190  
Contract Period: 06/01/84 - 12/01/85

Summary: A grant of \$50,000 was awarded for design and engineering analysis of the grain dryer using grain dust as fuel. The technology is available for licensing.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0225

DOE Coord: J.Aellen

Title: ROVAC High Efficiency Low Pressure Air Conditioning System

Description: An air conditioning unit which utilizes rotary vane compressor with multiple vanes and low pressure refrigerant such as R-114. The vanes in the compressor are mechanically restrained so that they do not touch the casing.

Inventor: Thomas C Edwards  
State : FL

Contact:  
Raymond E. Shea, Jr  
The ROVAC Corporation  
P. O. Box 111  
1030 Stafford St.  
Rochdale MA 01542  
508-892-4841

Status: Complete

Status Date: 01/20/90

OERI No.: 008593

Patent Status : Patent Applied For

Development Stage : Prototype Test

Technical Category: Transportation Systems, Vehicles & Components

Recv by NIST : 08/24/81

Recom. by NIST : 10/28/82

Award Date : 07/22/88 Award Amount: \$ 64,900 Grant No: FG01-88CE15346

Contract Period: 07/22/88 - 01/20/90

Summary: A grant of \$64,900 was awarded on July 22nd, 1988, to build two units for testing.

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DOE No: 0226

DOE Coord: D.G.Mello

Title: An Electronic Anemometer System for Locating Air- Infiltration Heat Leaks in Buildings

Description: An electronic anemometer system for detection and location of air infiltration in residential and commercial structures. A fan creates a negative pressure inside the structure and an electronic leak detector detects air motion at cracks in the building.

Inventor: Stewart Ryan  
State : OK

Contact:  
Stewart Ryan

Status: No DOE Support

Status Date: 07/31/85

OERI No.: 008826

Patent Status : Not Applied For

Development Stage : Prototype Development

Technical Category: Buildings, Structures & Components

Recv by NIST : 12/28/81

Recom. by NIST : 11/29/82

Summary: Action temporarily suspended at inventors request. Inventor sold six month option. Inventor subsequently abandoned project. Competing products now exist.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0227

DOE Coord: D.G.Mello

Title: CRM Pipe

Description: A process for manufacturing pipe for high pressure gas transmission lines.  
Metal pipe is wound with resin impregnated composite-fibre reinforcement.

Inventor: Norman C Fawley  
State : CA

Contact:  
Norman C Fawley  
NCF Industries  
2320 Cherry Industrial Circle  
Long Beach CA 90805  
213-630-5768

Status: Complete

Status Date: 12/31/85

OERI No.: 009055

Patent Status : Not Applied For  
Development Stage : Concept Development  
Technical Category: Miscellaneous

Recv by NIST : 03/01/82  
Recom. by NIST : 12/14/82  
Award Date : 07/15/84 Award Amount: \$ 50,000 Grant No: FG01-84CE15197  
Contract Period: 07/15/84 - 07/15/85

Summary: A grant of \$50,000 was awarded to test inventor's device to arrest crack propagation in gas pipelines. Test at Battelle prove value of system. Grantee attempting to license to major steel pipe manufacturer.

\*\*\*\*\*

DOE No: 0228

DOE Coord: J.Aellen

Title: EGD Fog Dispersal System

Description: An electrogasdynamic device for dispersing fog that propels a stream of negatively charged water droplets into the air causing fog droplets to become charged and electrically attracted to the ground.

Inventor: Meredith C Gourdine  
State : TX

Contact:  
Meredith C Gourdine  
Post Office Box #1228  
Friendswood TX 77546  
713-790-9892

Status: Complete

Status Date: 06/25/87

OERI No.: 008466

Patent Status : Patent # -  
Development Stage : Prototype Development  
Technical Category: Transportation Systems, Vehicles & Components

Recv by NIST : 06/19/81  
Recom. by NIST : 12/15/82  
Award Date : 06/26/85 Award Amount: \$ 88,840 Grant No: FG01-84CE15184  
Contract Period: 06/26/85 - 06/25/87

Summary: An \$88,840 cost sharing grant with Federal Express was awarded to install and demonstrate the technology at the Elmira, New York airport.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0229

DOE Coord: D.G.Mello

Title: Contoured Finger Follower Variable Valve-Timing Mechanism for Internal Combustion Engines

Description: An inexpensive mechanism for varying the valve- timing of internal combustion engines in response to variations in engine operating conditions.

Inventor: Edward M Tourtelot  
State : IL

Contact:  
Edward M Tourtelot

Status: No DOE Support

Status Date: 07/31/86

OERI No.: 008982

Patent Status : Patent Applied For  
Development Stage : Concept Development  
Technical Category: Combustion Engines & Components

Recv by NIST : 04/14/82

Recom. by NIST : 01/20/83

Summary: Inventor's son will carry project forward. A proposal is being prepared for DOE consideration. Inventor's successor abandoned project. No DOE support required.

\*\*\*\*\*

DOE No: 0230

DOE Coord: J.Aellen

Title: Absorption Heat Pump Augmented Separation Process

Description: A reverse absorption heat pump which transfers heat from the condenser of a distillation column to the reboiler using a lithium-bromide-water system.

Inventor: Donald C Erickson  
State : MD

Contact:  
Donald C Erickson  
627 Ridgely Avenue  
Annapolis MD 21401  
301-266-6521

Status: Complete

Status Date: 11/26/85

OERI No.: 007530

Patent Status : Patent # - 4402795 and others  
Development Stage : Concept Development  
Technical Category: Buildings, Structures & Components

Recv by NIST : 09/24/80

Recom. by NIST : 01/24/83

Award Date : 04/09/84 Award Amount: \$ 25,000 Grant No: FG01-84CE15172

Contract Period: 04/09/84 - 11/26/85

Summary: A first phase grant of \$25,000 was awarded on April 9, 1984 to find a suitable application and perform initial design. The inventor is still looking for an industrial partner to install and test a full- scale absorption heat pump. Phase one of this project has been completed.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0231 DOE Coord: G.K.Ellis

Title: Natural Gas from Deep-Brine Solutions

Description: A process for recovering geopressure methane gas by use of a deep-submerged separator of special design which separates the methane at depth and continuously recirculates the spent brine back into the formation of origin.

Inventor: Guy R B Elliott  
State : NM

Contact:  
Guy R B Elliott  
Los Alamos Cons Alpha Inc  
133 La Senda Road  
Los Alamos NM 87544  
505-672-3603

Status: Complete Status Date: 09/30/86 OERI No.: 009008

Patent Status : Patent # - 4262747  
Development Stage : Prototype Development  
Technical Category: Fossil Fuels

Recv by NIST : 05/05/82  
Recom. by NIST : 01/24/83  
Award Date : 04/02/84 Award Amount: \$ 75,000 Grant No: FG01-84CE15171  
Contract Period: 04/02/84 - 10/01/86

Summary: An grant of \$75,000 was awarded to build and test a prototype on the lab scale. Carbon dioxide dissolved in water will be used to operate the pump. The tests were performed and the results were encouraging.

\*\*\*\*\*

DOE No: 0232 DOE Coord: J.Aellen

Title: Method of Separating Lignin and Making Epoxide- Lignin

Description: A process for low cost separation of lignin from the black cooking liquor which is a waste product from the kraft and sulfite paper pulping process, and for producing lignin-epoxide resins.

Inventor: Kenneth R Kurple  
State : MI

Contact:  
Kenneth R Kurple  
9533 Springborn Road  
Anchorville MI 48004  
313-727-7631

Status: Complete Status Date: 04/30/87 OERI No.: 007662

Patent Status : Patent # - 4111928  
Development Stage : Limited Production/Marketing  
Technical Category: Industrial Processes

Recv by NIST : 10/14/80  
Recom. by NIST : 01/26/83  
Award Date : 07/19/84 Award Amount: \$ 96,914 Grant No: FG01-84CE15193  
Contract Period: 07/19/84 - 04/30/87

Summary: A \$61,739 first phase grant was awarded to perform lab analysis. A second phase of \$35,175 was awarded to complete the laboratory work.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0233

DOE Coord: J.Aellen

Title: Mounted Steerable Ripper for Deep Soil Ripping and Subsoil Operations

Description: An hydraulically-actuated, rear-mounted, steerable ripper for crawler tractors intended for agricultural deep tillage operations. The steering action of the ripper assists or affects tractor steering, permitting more effective utilization of power transmitted to the tractor tracks.

Inventor: Daniel A Lockie  
State : CA

Contact:  
Daniel A Lockie

Status: No DOE Support

Status Date: / /

OERI No.: 008984

Patent Status : Not Applied For  
Development Stage : Concept Development  
Technical Category: Industrial Processes

Recv by NIST : 04/15/82  
Recom. by NIST : 02/01/83

Summary: Comparable technology is already on the market.

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DOE No: 0234

DOE Coord: G.K.Ellis

Title: Geodesic Solar Paraboloid

Description: A parabolic point-focusing solar concentrator consisting of a dish reflecting surface, a track and a geodesic reflector support system.

Inventor: Douglas E Wood  
State : WA

Contact:  
Douglas E Wood  
Box #32  
Fox Island WA 98333  
206-549-2190

Status: Complete

Status Date: 02/14/86

OERI No.: 002968

Patent Status : Patent # - 4171876  
Development Stage : Prototype Test  
Technical Category: Direct Solar

Recv by NIST : 11/18/77  
Recom. by NIST : 02/24/83  
Award Date : 04/17/85 Award Amount: \$ 50,000 Grant No: FG01-85CE15203  
Contract Period: 04/17/85 - 09/16/86

Summary: A grant of \$50,000 was awarded on April 17, 1985 to make design improvements to the existing prototype. It is currently being tested for improvement of efficiency.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0235

DOE Coord: G.K.Ellis

Title: Single Stage Anaerobic Digestion Process

Description: A process for accelerating the manufacture of relatively high-purity methane fuel gas through a process of anaerobic digestion, involving retention of organic material in an aqueous slurry which is maintained at a predetermined V/I ratio, temperature, and minimizes the production of carbon dioxide.

Inventor: Jay E Ort  
State : PA

Contact:  
Harry Curtin  
Penn State Engineering Inc  
522 East College Avenue  
P O Box #177  
State College PA 16801  
814-238-5013

Status: Complete

Status Date: 12/04/85

OERI No.: 008644

Patent Status : Patent Applied For  
Development Stage : Concept Development  
Technical Category: Fossil Fuels

Recv by NIST : 09/18/81  
Recom. by NIST : 03/30/83  
Award Date : 04/02/84 Award Amount: \$ 50,000 Grant No: FG01-84CE15170  
Contract Period: 04/02/84 - 12/04/85

Summary: A grant was awarded to study and optimize the basic parameters of the process. The first run of tests were not successful due to defective equipment. Another series of tests was performed. The process is not as efficient as anticipated, and it is not economically feasible.

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DOE No: 0236

DOE Coord: A.R.Barnes

Title: Steam Turbine Packing Ring

Description: A self-adjusting steam turbine packing ring that provides large shaft clearance during turbine start-up and reduced shaft clearance at normal turbine operating speeds. This action avoids packing ring damage during start-up and results in higher operating efficiency. A private sector public-utility is funding further development.

Inventor: Ronald E Brandon  
State : NY

Contact:  
Ronald E Brandon  
1734 Lenox Road  
Schenectady NY 12308  
518-374-1220

Status: Complete

Status Date: 07/02/87

OERI No.: 009167

Patent Status : Patent Applied For  
Development Stage : Concept Development  
Technical Category: Combustion Engines & Components

Recv by NIST : 10/25/82  
Recom. by NIST : 04/07/83  
Award Date : 08/08/84 Award Amount: \$ 51,900 Grant No: FG01-84CE15189  
Contract Period: 08/08/84 - 07/02/86

Summary: Development was completed in 1987. Operating tests on 200MW PEPCO unit indicate 1.25% gain in heat rate efficiency. Exclusive license with Quabbin Industries, a manufacturer of steam turbine components, was signed in 1987. In the first year of his license, 37 sets were sold.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0237 DOE Coord: D.G.Mello

Title: Hicks Alter-Brake System/Electric Charging Apparatus for Ground Vehicles

Description: An automotive electrical generating and battery charging system that is driven primarily by vehicle momentum during braking, thus reducing required engine power output.

Inventor: David E Hicks  
State : CO

Contact:  
David E Hicks  
5244 Cracker Barrel Circle  
Colorado Springs CO 80917  
303-596-4390

Status: Complete Status Date: 09/20/85 OERI No.: 009232

Patent Status : Patent # -  
Development Stage : Prototype Test  
Technical Category: Transportation Systems, Vehicles & Components

Recv by NIST : 01/19/82  
Recom. by NIST : 05/12/83  
Award Date : 09/20/84 Award Amount: \$ 56,438 Grant No: FG01-84CE15183  
Contract Period: 09/20/84 - 09/20/85

Summary: A grant of \$56,438 was awarded to build and test prototype battery charging system using automobile momentum only. Project successfully completed. Grantee attempting to license product.

\*\*\*\*\*

DOE No: 0238 DOE Coord: G.K.Ellis

Title: Industrial and Residential Clothes Dryer Automatic Shut-Off at Dryness

Description: A sensing system to shut off clothes dryer when the clothes have been dried completely. The proposed system measures the time interval between consecutive peaks as the dryer is cycled on and off between high and low temperature limits and shuts the dryer off when the time intervals become constant.

Inventor: Harry E Wood  
State : LA

Contact:  
Harry E Wood  
6465 Oakland Drive  
New Orleans LA 70118  
504-488-7853

Status: Complete Status Date: 09/17/85 OERI No.: 009120

Patent Status : Not Applied For  
Development Stage : Laboratory Test  
Technical Category: Miscellaneous

Recv by NIST : 08/31/82  
Recom. by NIST : 05/12/83  
Award Date : 03/07/84 Award Amount: \$ 57,000 Grant No: FG01-84CE15168  
Contract Period: 03/07/84 - 03/26/85

Summary: A grant of \$57,000 was awarded on September 17, 1985 for building and testing a prototype. The project was successfully concluded. The inventor licensed his technology.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0239

DOE Coord: J.Aellen

Title: Electrochemical Separation and Concentration of Sulfur-Containing Gases from Gas Mixtures

Description: An electrochemical process for removing sulfur oxides from flue gas discharges from power plants which burn sulfur-containing fuels, principally high sulfur coals.

Inventor: Jack Winnick  
State : GA

Contact:  
Jack Winnick  
3028 Vinings Way  
Atlanta GA 30339  
404-894-2839

Status: Complete

Status Date: 06/30/86

OERI No.: 008674

Patent Status : Patent # - 4246081  
Development Stage : Working Model  
Technical Category: Industrial Processes

Recv by NIST : 10/01/81  
Recom. by NIST : 05/18/83  
Award Date : 06/04/84 Award Amount: \$ 50,000 Grant No: FG01-84CE15178  
Contract Period: 06/04/84 - 06/30/86

Summary: ERIIP provided and transferred a \$50,000 grant to PETC which added \$200,000. Work was performed at Georgia Tech Research Institute where electrode models were fabricated and tested in a bench scale model of the process.

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DOE No: 0240

DOE Coord: G.K.Ellis

Title: All Steam Heated Sadiron for Commercial Use

Description: A commercial use sadiron which is operated solely by superheated high pressure steam generated from an external boiler to supply both the heat to the iron sole plate and steam for moisture spray application as needed during the ironing practice.

Inventor: Jay R Royston  
State : CA

Contact:  
Uwe H Butenhoff

Status: No DOE Support

Status Date: 09/17/85

OERI No.: 008823

Patent Status : Patent Applied For  
Development Stage : Engineering Design  
Technical Category: Miscellaneous

Recv by NIST : 12/28/81  
Recom. by NIST : 07/19/83

Summary: Initial request for grant was rejected due to probable insufficient energy-saving potential. A study conducted by NATAS indicated insufficient market for this product. Two other companies are producing somewhat related product.

DOE No: 0241 DOE Coord: J.Aellen

Title: Polysulfide Oil Field Corrosion Control System

Description: A polysulfide additive to inhibit the corrosion of ferrous based metals in oil field and geothermal applications.

Inventor: Richard J Gay  
State : TX

Contact:  
Richard J Gay  
9215 Clarewood - #358  
Houston TX 77036  
713-498-8553

Status: Complete Status Date: 09/05/85 OERI No.: 008601

Patent Status : Not Applied For  
Development Stage : Prototype Development  
Technical Category: Fossil Fuels

Recv by NIST : 08/24/81  
Recom. by NIST : 07/28/83  
Award Date : 12/07/84 Award Amount: \$ 73,900 Grant No: FG01-85CE15200  
Contract Period: 12/07/84 - 09/05/85

Summary: A grant of \$73,900 was awarded on December 7th, 1984 to perform lab test, analysis and field test.

\*\*\*\*\*

DOE No: 0242 DOE Coord: G.K.Ellis

Title: New Petersburg Beam Trawl

Description: An improved trawl design to reduce drag for either single rigged or double rigged vessels.

Inventor: Donald Shuler  
State : AK

Contact:  
Donald Shuler  
General Delivery  
Petersburg AK 99833  
907-772-3038

Status: Complete Status Date: 06/30/86 OERI No.: 009310

Patent Status : Disclosure Document Program  
Development Stage : Prototype Development  
Technical Category: Industrial Processes

Recv by NIST : 12/22/82  
Recom. by NIST : 09/29/83  
Award Date : 09/05/84 Award Amount: \$ 63,000 Grant No: FG01-84CE15180  
Contract Period: 09/05/84 - 09/05/85

Summary: A grant of \$63,000 was awarded on September 5, 1984 to build and test a prototype beam-trawl fishing net to determine fuel efficiency per pound of catch. The inventor failed to submit quarterly technical reports. The beam trawl nets were built but never tested in the presence of an independent observer from the Sea Grant Program. Inventor's whereabouts are unknown. The contracting officer was informed of this fact. Further pursuit was determined not to be in the government's best interests.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0243

DOE Coord: P.M.Hayes

Title: An Electronic/Pneumatic Ejector System for Producing an Aluminum Rich Concentrate from Municipal Waste

Description: Method and apparatus for processing municipal waste to overcome the disadvantages of the mass burning and the refuse derived-fuel methods by combining the two processes and recovering aluminum and steel.

Inventor: Edward J Sommer, Junior  
State : TN

Contact:  
Garry R Kenny  
Magnetic Separation Syst Inc  
105 28th Avenue, South  
Nashville TN 37212  
615-329-0695

Status: Complete

Status Date: 09/13/85

OERI No.: 008031

Patent Status : Disclosure Document Program  
Development Stage : Working Model  
Technical Category: Industrial Processes

Recv by NIST : 01/23/81  
Recom. by NIST : 09/29/83  
Award Date : 09/15/84 Award Amount: \$ 50,640 Grant No: FG01-84CE15179  
Contract Period: 09/15/84 - 09/13/85

Summary: A grant of \$50,000 was awarded on August 15th, 1984 to design, build and test a prototype of the aluminum recovery system. The inventors have licensed the process to National Recovery Technology in Nashville, Tennessee and they are marketing the system. A new application to remove aluminum contaminants from crushed recycled glass and granulated beverage bottles was developed and the marketing rights for the European Common Market were licensed to a West German company.

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DOE No: 0244

DOE Coord: J.Aellen

Title: CHARLIE - Trademark - Federally Registered #1123957

Description: An electronic system for controlling engine- compression type brakes used on trucks.

Inventor: Charles E Robinson  
State : CO

Contact:  
Brad L Pfeifley  
CAMACAN, Inc.  
7730 Belleview  
Suite #204  
Englewood CO 80111  
303-850-0404

Status: Complete

Status Date: 04/10/86

OERI No.: 009459

Patent Status : Patent # - 4305353 and others  
Development Stage : Limited Production/Marketing  
Technical Category: Transportation Systems, Vehicles & Components

Recv by NIST : 02/03/83  
Recom. by NIST : 09/29/83  
Award Date : 09/11/84 Award Amount: \$ 51,655 Grant No: FG01-84CE15194  
Contract Period: 09/11/84 - 04/10/86

Summary: A grant of \$51,655 was awarded to build and test a prototype.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0245

DOE Coord: J.Aellen

Title: Improved Oil Well Pumping Unit

Description: A vector force balanced oil well pumping assembly.

Inventor: Thomas Neil Parker, Junior  
State : OK

Contact:  
Thomas Neil Parker, Junior  
Thomas Parker Insurance  
P O Box #356  
Boswell OK 74727  
405-566-2535

Status: Complete

Status Date: 06/30/86

OERI No.: 009241

Patent Status : Disclosure Document Program  
Development Stage : Working Model  
Technical Category: Fossil Fuels

Recv by NIST : 11/23/82  
Recom. by NIST : 09/29/83  
Award Date : 06/25/84 Award Amount: \$ 61,801 Grant No: FG01-84CE15177  
Contract Period: 06/25/84 - / /

Summary: A grant of \$59,121 was awarded on June 25th, 1984 to build and test a prototype. Work to be conducted in cooperation with Rural Enterprises Inc. Potential exists for cost sharing in development and marketing. A supplemental grant of \$2,680 was awarded on April 8th, 1985. Testing indicates that the pump is very efficient.

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DOE No: 0246

DOE Coord: D.G.Mello

Title: Maximum Cruise Performance

Description: Maximum cruise performance of jet powered aircraft is achieved by maintaining the ratio of "fuel flow to ground speed" to a minimum by using a closed loop feedback system and a software algorithm package connected into the aircraft's avionic mission computer network.

Inventor: Juan M Garcia, Junior  
State : MO

Contact:  
Juan M Garcia, Junior

Status: No DOE Support

Status Date: 06/31/85

OERI No.: 008733

Patent Status : Not Applied For  
Development Stage : Engineering Design  
Technical Category: Transportation Systems, Vehicles & Components

Recv by NIST : 11/09/81  
Recom. by NIST : 10/31/83

Summary: Preliminary proposal received from inventor. Coordinator seeking private sector assistance. Grantee unable to define suitable test program leading to marketable product.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0247

DOE Coord: D.G.Mello

Title: Energy Conservation by Improved Control of Bulk Power Transfers on Interconnected Systems

Description: In an interconnected electric power system, the parameters' system time deviation and area inadvertent interchange can be decomposed into components respectively caused by regulating deficiencies in each of the individual control areas. These components can serve as the basis for an equitable payment technique for unscheduled transfers to replace the present practice of "repayment in kind".

Inventor: Nathan Cohn  
State : PA

Contact:  
Nathan Cohn  
8033 Via de Viva  
Scottsdale AZ 85258  
602-991-7063

Status: Complete

Status Date: 10/30/86

OERI No.: 009342

Patent Status : Patent # - 4267571  
Development Stage : Prototype Development  
Technical Category: Miscellaneous

Recv by NIST : 01/19/83  
Recom. by NIST : 11/18/83  
Award Date : 09/05/84 Award Amount: \$ 60,000 Grant No: FG01-84CE15187  
Contract Period: 09/05/84 - 02/15/86

Summary: A grant was awarded to study the uneconomical inadvertent interchange of electric power between a number of cooperating electric utility companies, and to recommend a method to correct the resulting energy losses. Grantee will license method to interested utilities.

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DOE No: 0248

DOE Coord: J.Aellen

Title: Dyna-Bite Traction Intensifier, Model Agri, for Agricultural Tractors or the Like

Description: A device consisting of individual tire segments that are strapped to the driving wheels of a tractor or similar vehicle to improve traction and minimize the need for adding weight to get better traction.

Inventor: Thorvald G Granryd  
State : IL

Contact:  
Thorvald G Granryd  
P O Box #258  
1260 North Western Avenue  
Apartment #109  
Lake Forest IL 60045  
312-234-8250

Status: Complete

Status Date: 12/31/85

OERI No.: 008617

Patent Status : Patent # - 4225082 and others  
Development Stage : Production Engineering  
Technical Category: Industrial Processes

Recv by NIST : 08/12/81  
Recom. by NIST : 11/22/83  
Award Date : 09/18/84 Award Amount: \$ 70,189 Grant No: FG01-84CE15186  
Contract Period: 09/18/84 - 12/31/85

Summary: A grant was awarded to build and test prototype traction intensifiers. Tests performed for traction were successful, but the device had minor durability problems. A phase two grant was awarded to develop design modifications capable of overcoming problems.

DOE No: 0249 DOE Coord: G.K.Ellis

Title: Subsurface Flow Control (Gas Wells) and High Gas- Oil-Ratio Oil Wells

Description: Subsurface gas well flow control and purge valve.

Inventor: Patrick S Swihart, Senior  
State : NM

Contact:  
Patrick S Swihart, Senior  
Box #262  
Timberon NM 88350  
505-987-2449

Status: Complete Status Date: 08/19/85 OERI No.: 009220

Patent Status : Patent # - 4036297 and others  
Development Stage : Prototype Test  
Technical Category: Fossil Fuels

Recv by NIST : 11/16/82  
Recom. by NIST : 12/30/83  
Award Date : 08/19/85 Award Amount: \$ 16,074 Grant No: FG01-85CE15202  
Contract Period: 08/19/85 - 08/18/87

Summary: An award was granted for \$16,074 on August 19, 1985 to build and test a prototype. Grantee experienced various problems trying to get valid tests. Project has been completed.

\*\*\*\*\*

DOE No: 0250 DOE Coord: P.M.Hayes

Title: A System to Adapt Diesel Engines to the Use of Crude Oils

Description: A three-part system for converting conventional diesel engines so they can be operated on either No. 2 diesel fuel or heavy fuels such as crude oil or vegetable oils.

Inventor: Hugh Edwin Whitted III  
State : NC

Contact:  
Hugh Edwin Whitted III  
Route #2, Box #444-A  
East Bend NC 27018

Status: Complete Status Date: 05/26/89 OERI No.: 009458

Patent Status : Not Applied For  
Development Stage : Prototype Test  
Technical Category: Combustion Engines & Components

Recv by NIST : 03/14/83  
Recom. by NIST : 12/30/83  
Award Date : 08/27/86 Award Amount: \$ 82,057 Grant No: FG01-86CE15284  
Contract Period: 08/27/86 - 05/26/89

Summary: A fifteen month, \$82,057 grant was awarded to modify both a direct and indirectly injected Diesel engine to operate directly on crude oil. Preliminary results have shown no deterioration in critical engine components, and acceptable emission levels. The engines will find application in multi-fuel trucks and stationary engines.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0251

DOE Coord: G.K.Ellis

Title: Process and Apparatus for Reducing the Energy Required to Separate Liquids by Distillation

Description: A method for heat recovery in distillation by providing heat exchange tubing directly on the trays of the tower. This method is used primarily in crude oil stills.

Inventor: Victor R Thayer  
State : DE

Contact:  
E A Kiessling  
Texim Associates  
15402 Wandering Trail  
Friendswood TX 77546  
302-239-5059

Status: Complete

Status Date: 09/12/88

OERI No.: 009260

Patent Status : Patent # - 4265736  
Development Stage : Prototype Test  
Technical Category: Industrial Processes

Recv by NIST : 12/03/82  
Recom. by NIST : 01/31/84  
Award Date : 03/13/87 Award Amount: \$ 41,565 Grant No: FG01-87CE15303  
Contract Period: 03/13/87 - 09/12/88

Summary: A grant of \$41,565 was awarded on March 13, 1987, to investigate the technology further. The technology was determined not to be cost effective under current economic conditions.

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DOE No: 0252

DOE Coord: D.G.Mello

Title: Thermal Bank

Description: The "Thermal Bank" is a latent heat type thermal energy storage system. Calcium chloride hexahydrate, the phase change salt, or any suitable phase change material, is used as the working medium. Selected plastic film is employed to form, fill and seal the tube sheets for the "Thermal Bank" packaging.

Inventor: William C Whitman  
State : NJ

Contact:  
William C Whitman  
Three Fourth Street  
New Brunswick NJ 08901  
201-545-3849

Status: Complete

Status Date: 08/26/86

OERI No.: 009217

Patent Status : Patent # - 4287942  
Development Stage : Production Engineering  
Technical Category: Miscellaneous

Recv by NIST : 11/02/82  
Recom. by NIST : 01/31/84  
Award Date : 03/19/85 Award Amount: \$ 70,778 Grant No: FG01-85CE15211  
Contract Period: 03/19/85 - 09/18/85

Summary: A grant of \$70,778 was awarded on March 19, 1985 to Rutgers University to test efficiency of various packaging materials and eutectic salts. The grantee reached agreement with Rutgers to continue R & D beyond grant period using private sector and State of New Jersey co-funding.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0253

DOE Coord: J.Aellen

Title: High Performance Heat Pump

Description: A modified Brayton refrigeration cycle using injected liquid to achieve better performance.

Inventor: Anthony Peters  
State : NJ

Contact:  
Anthony Peters  
300 Winston Drive  
Cliffside Park NJ 07010  
201-886-1320

Status: Complete

Status Date: 11/26/85

OERI No.: 008635

Patent Status : Not Applied For  
Development Stage : Engineering Design  
Technical Category: Buildings, Structures & Components

Recv by NIST : 09/10/81  
Recom. by NIST : 02/24/84  
Award Date : 09/27/84 Award Amount: \$ 63,200 Grant No: FG01-84CE15198  
Contract Period: 09/27/84 - 11/26/85

Summary: An grant of \$63,200 was awarded to perform a thermodynamic analysis, study component design and perform an economic analysis. Received the final report for the work done in phase I. The inventor worked on a different version of heat pump rather than the one that was recommended by N.B.S. without prior approval of DOE. Work terminated on this project. About \$25,000 of the total grant has been spent so far.

\*\*\*\*\*

DOE No: 0254

DOE Coord: D.G.Mello

Title: "Turbo-Glo" Immersion Furnace

Description: A gas-fired melting furnace designed for melting aluminum. The design uses a new type combustion chamber and heat transfer device.

Inventor: Daniel Douenias  
State : NY

Contact:  
Daniel Douenias  
Gim Metal Products, Inc.  
164 Glen Cove Road  
Carle Place NY 11514  
516-741-3005

Status: Complete

Status Date: 09/30/86

OERI No.: 009327

Patent Status : Not Applied For  
Development Stage : Prototype Development  
Technical Category: Industrial Processes

Recv by NIST : 01/10/83  
Recom. by NIST : 03/23/84  
Award Date : 01/29/85 Award Amount: \$ 74,700 Grant No: FG01-85CE15201  
Contract Period: 01/29/85 - 07/29/86

Summary: A grant of \$74,700 was awarded on January 29, 1985 to build and test a prototype under actual foundry conditions. Invention saves 66% of fuel formerly required for the same operation. Grantee plans to license technology to competitors.

DOE No: 0255 DOE Coord: G.K.Ellis

Title: Method and Apparatus for Scrubbing Gas - Scrubbing Apparatus

Description: A patented stack gas scrubber which contains a rotatable impeller to duplicate high energy venturi scrubber performance and which is claimed, as a result of test, to use 50% the power consumption.

Inventor: Arthur F Stone  
State : NJ

Contact:  
Arthur F Stone

Status: No DOE Support Status Date: 11/13/91 OERI No.: 009806

Patent Status : Patent # - 4289506 and others  
Development Stage : Prototype Test  
Technical Category: Industrial Processes

Recv by NIST : 11/03/83  
Recom. by NIST : 03/27/84

Summary: This decision reached after several unacceptable proposals have been received from the inventor, and many unsuccessful attempts have been made to negotiate with him, being unable each time to reach agreement as to what constituted an acceptable proposal that DOE could support.

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DOE No: 0256 DOE Coord: J.Aellen

Title: Method and Apparatus for Irrigating Container Grown Plants

Description: A method and apparatus for irrigating container grown plants.

Inventor: Evert S Green  
State : NY

Contact:  
Evert S Green

Status: Other Assistance Status Date: 09/30/89 OERI No.: 009696

Patent Status : Patent # - 4245434 and others  
Development Stage : Production & Marketing  
Technical Category: Miscellaneous

Recv by NIST : 09/14/83  
Recom. by NIST : 04/25/84

Summary: Referred to NATAS for licensing assistance.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0257

DOE Coord: A.R.Barnes

Title: Method and Apparatus for Melting Snow

Description: A process to remove snow from city streets by melting instead of hauling to dump sites.

Inventor: Richard H Baasch  
State : NE

Contact:  
Richard H Baasch  
Post Office Box #1013  
Grand Isle NE 68802  
308-382-5749

Status: Complete

Status Date: 08/25/86

OERI No.: 009758

Patent Status : Patent Applied For  
Development Stage : Production Engineering  
Technical Category: Miscellaneous

Recv by NIST : 10/07/83  
Recom. by NIST : 04/30/84  
Award Date : 08/26/85 Award Amount: \$ 60,492 Grant No: FG01-85CE15204  
Contract Period: 08/26/85 - 08/25/86

Summary: A grant of \$60,492 was awarded on August 26, 1985, to build and test three prototypes in cooperation with various municipalities. Technology shelved on basis of cost effectiveness.

\*\*\*\*\*

DOE No: 0258

DOE Coord: J.Aellen

Title: Corrosion Protection Process for Bore Hole Tool

Description: A process for providing an aluminum alloyed surface on iron-base alloys for down-hole tools and parts for improved corrosion resistance replacing more expensive alloys such as chromium and nickel-based alloys and others. This process would be used primarily for parts used in gas and oil wells.

Inventor: Anthony T Rallis  
State : TX

Contact:  
Anthony T Rallis  
4700 Polo Parkway  
Apartment #103  
Midland TX 79705  
915-684-8811

Status: Complete

Status Date: 09/30/89

OERI No.: 009525

Patent Status : Disclosure Document Program  
Development Stage : Concept Development  
Technical Category: Industrial Processes

Recv by NIST : 04/29/83  
Recom. by NIST : 05/15/84  
Award Date : 04/22/85 Award Amount: \$ 67,766 Grant No: FG01-85CE15213  
Contract Period: 04/22/85 - 04/30/87

Summary: A grant of \$67,766 was awarded on April 22d, 1985, to prepare samples suitable for laboratory and field tests. The technology is in limited production.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0259 DOE Coord: G.K.Ellis

Title: Hydrostatic Support Sleeve and Rod - Gas Release Probe

Description: A mechanism for reducing or eliminating gas-lock problems with oil well pumps.

Inventor: William A Jones  
State : CA

Contact:  
William A Jones  
P O Box #621  
Lotus CA 95651  
916-622-9171

Status: Complete Status Date: 07/15/86 OERI No.: 009812

Patent Status : Disclosure Document Program  
Development Stage : Prototype Test  
Technical Category: Industrial Processes

Recv by NIST : 11/07/83  
Recom. by NIST : 05/17/84  
Award Date : 04/15/85 Award Amount: \$ 81,220 Grant No: FG01-85CE15216  
Contract Period: 04/15/85 - 04/04/86

Summary: A grant of \$81,220 was awarded on April 15, 1985, to build and test a prototype in cooperation with oil producing companies. Project completed with average production increase of 24.5% and average energy saving of 44.3%. Inventor has licensed the technology.

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DOE No: 0260 DOE Coord: G.K.Ellis

Title: Method and Apparatus for Handling and Dry Quenching Coke

Description: Method and apparatus for handling and dry quenching coke which is pollution free, producing higher yields of quality coke with a recovery means of sensible heat for a useful purpose.

Inventor: Edward S Kress  
State : IL

Contact:  
Gene C Carpenter  
227 Illinois Street  
Brimfield IL 61517  
309-446-3395

Status: Complete Status Date: 08/06/87 OERI No.: 009736

Patent Status : Patent # - 4285772  
Development Stage : Production & Marketing  
Technical Category: Industrial Processes

Recv by NIST : 10/03/83  
Recom. by NIST : 05/24/84  
Award Date : 05/31/85 Award Amount: \$ 57,773 Grant No: FG01-85CE15227  
Contract Period: 05/31/85 - 08/06/87

Summary: A grant was awarded to build and test a prototype, which has been successfully tested and put in operation. As part of a cleanup of Bethlehem Steel's Sparrows Point plant in Baltimore, MD, the installation of a Kress/coke-quenching system will be completed by October, 1991. Major benefits are anticipated in reduced maintenance requirements, increased yield per ton of coal treated, increased energy-saving from the hot coke, improved coke quality, and increased coke oven productivity.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0261 DOE Coord: G.K.Ellis

Title: A New Apparatus for Making Asphalt Concrete

Description: An asphalt concrete manufacturing process that reduces energy requirements by recovering the latent heat of vaporization from the moisture removed during the manufacturing process and eliminates air pollution by using modern heat transfer methods.

Inventor: Paul E Bracegirdle  
State : PA

Contact:  
Paul E Bracegirdle

Status: Other Assistance Status Date: 09/17/85 OERI No.: 009690

Patent Status : Patent # - 4378162 and others  
Development Stage : Production Engineering  
Technical Category: Industrial Processes

Recv by NIST : 09/06/83  
Recom. by NIST : 05/24/84

Summary: Inventor licensed his technology to a foreign company. There is no further action required of DOE.

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DOE No: 0262 DOE Coord: J.Aellen

Title: Energy Saving Pump and Pumping System

Description: A centrifugal pump and pumping system that automatically provide recirculating flow at low output flows when pump cooling is needed and that recovers hydraulic energy in response to reduced output flows.

Inventor: Kai-Chih Cheng  
State : WA

Contact:  
Kai-Chih Cheng  
Innovative Tech Laboratory  
2339 Davison Avenue  
Richland WA 99336  
509-582-2660

Status: Complete Status Date: 09/16/86 OERI No.: 009691

Patent Status : Patent # - 4396347  
Development Stage : Working Model  
Technical Category: Miscellaneous

Recv by NIST : 09/06/83  
Recom. by NIST : 06/20/84  
Award Date : 04/17/85 Award Amount: \$ 85,837 Grant No: FG01-85CE15207  
Contract Period: 04/17/85 - 09/16/86

Summary: A grant was awarded on to build and test the proposed pump.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0263 DOE Coord: J.Aellen

Title: Method for Reconditioning Rivetless Chain Links

Description: An upsetting process used to recondition chain links of the type used on industrial conveyors.

Inventor: William Tunderman  
State : IL

Contact:  
William Tunderman

Status: No DOE Support Status Date: 09/18/85 OERI No.: 009849

Patent Status : Patent # - 4229962  
Development Stage : Limited Production/Marketing  
Technical Category: Industrial Processes

Recv by NIST : 10/03/83  
Recom. by NIST : 06/22/84

Summary: Inventor received an award to conduct a market survey from the State of Illinois. Further assistance will be considered by DOE at the completion of the market survey.

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DOE No: 0264 DOE Coord: J.Aellen

Title: Desulfurization of Coal

Description: A process for the selective wet oxidation of the sulfur content of high sulfur coal into sulfur trioxide or other use in order to produce a low sulfur coal for the slurry pipeline transport or other use.

Inventor: Donald F Othmer  
State : NY

Contact:  
Agit Chowdhury  
Zimpro. Incorporated  
Military Road  
Rothschild WI 54474  
715-359-7211

Status: Complete Status Date: 06/02/86 OERI No.: 009202

Patent Status : Patent # - 4251277  
Development Stage : Engineering Design  
Technical Category: Industrial Processes

Recv by NIST : 11/09/82  
Recom. by NIST : 06/22/84  
Award Date : 07/03/85 Award Amount: \$ 71,244 Grant No: FG01-85CE15206  
Contract Period: 07/03/85 - 06/02/86

Summary: A grant was awarded to perform laboratory tests for desulfurization of coal by Zimpro, Inc., located in Wisconsin.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0265

DOE Coord: G.K.Ellis

Title: Flozone method and Apparatus for Direct Application of Treatment Liquid to Growing Vegetation

Description: A new type of tractor-mounted applicator that wipes herbicide onto growing weeds.

Inventor: John W Richardson  
State : LA

Contact:  
John W Richardson  
J Sherman Richardson  
Route Three, Box #81  
Colfax LA 71417  
318-627-9171

Status: Complete

Status Date: 09/30/89

OERI No.: 009918

Patent Status : Patent Applied For  
Development Stage : Prototype Development  
Technical Category: Industrial Processes

Recv by NIST : 01/06/84  
Recom. by NIST : 07/18/84  
Award Date : 07/15/86 Award Amount: \$113,417 Grant No: FG01-85CE15217  
Contract Period: 07/15/86 - 09/23/88

Summary: A grant was awarded to build and test a prototype. Inventor was given an additional awarded in view of some unanticipated development problems encountered. A production prototype was completed and is in the market place. Compared to the alternative technologies, Flozone's cost is less than half the cost for the wick method and about one-fifth the cost of overtop spray. Inventor is being helped to find licensing or joint venture opportunity.

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DOE No: 0266

DOE Coord: J.Aellen

Title: Energy Conversion Method

Description: A novel "Heat Pump" using engine-driven compressor and steam ejectors to compress low pressure steam to more useful levels.

Inventor: Dan Egosi  
Country : Israel

Contact:  
Dan Egosi

Status: Other Assistance

Status Date: 09/13/85

OERI No.: 009582

Patent Status : Patent # - 4282070  
Development Stage : Concept Development  
Technical Category: Buildings, Structures & Components

Recv by NIST : 01/06/83  
Recom. by NIST : 08/22/84

Summary: Inventor needs licensing help. DOE sent him names of appropriate companies in the U.S. to be contacted for licensing.

DOE No: 0267                      DOE Coord: J.Aellen

Title: Integrated Gasification of Coal, Municipal Solid Wastes and Sludge

Description:    Hardware and a process for gasifying coal, solid wastes and sewage sludge.

Inventor:   Shang-I Cheng                      Contact:  
 State     :   NJ                                Shang-I Cheng  
                                                  Seventeen Woodsend Drive  
                                                  Matawan NJ   07747  
                                                  212-254-6300

Status: Complete                      Status Date: 06/09/87                      OERI No.: 009565

Patent Status        :   Patent # - 4357713  
 Development Stage :   Prototype Development  
 Technical Category:   Industrial Processes

Recv by NIST        : 05/23/83  
 Recom. by NIST     : 08/22/84  
 Award Date         : 05/10/85                      Award Amount: \$ 70,000 Grant No: FG01-85CE15222  
 Contract Period: 05/10/85   -   06/09/87

Summary:                      A grant was awarded to perform laboratory tests, computer simulation and preliminary design.

\*\*\*\*\*

DOE No: 0268                      DOE Coord: J.Aellen

Title: Apparatus for Enhancing Chemical Reactions

Description:    A process for using ultrasonic energy to enhance chemical reactions and extraction processes.

Inventor:   Harold T Sawyer                      Contact:  
 State     :   CA                                Harold T Sawyer  
                                                  845 Via de la Paz  
                                                  Pacific Palisades   CA   92663  
                                                  213-459-3020

Status: Complete                      Status Date: 05/01/87                      OERI No.: 009794

Patent Status        :   Patent # - 4369100 and others  
 Development Stage :   Prototype Test  
 Technical Category:   Fossil Fuels

Recv by NIST        : 10/31/83  
 Recom. by NIST     : 08/22/84  
 Award Date         : 05/02/86                      Award Amount: \$ 75,402 Grant No: FG01-86CE15263  
 Contract Period: 05/02/86   -   05/01/87

Summary:                      An award was granted to build a model and have it tested at the University of Utah.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0269

DOE Coord: G.K.Ellis

Title: Refrigerant Accumulator and Charging Apparatus

Description: An accumulator-charger installed in the suction line of a vapor-compression refrigeration unit. It provides for accumulation of liquid refrigerant/oil thereby preventing liquid refrigerant from being drawn into the compressor, and intended to prevent overcharging or undercharging the refrigerant system.

Inventor: Richard J Avery, Junior  
State : TX

Contact:  
Richard J Avery, Junior

Status: No DOE Support

Status Date: 09/30/91

OERI No.: 009971

Patent Status : Patent Applied For  
Development Stage : Limited Production/Marketing  
Technical Category: Buildings, Structures & Components

Recv by NIST : 02/07/84

Recom. by NIST : 08/30/84

Summary: Inventor attended commercialization workshop, Leesburg, VA. The technology is being marketed by other parties.

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DOE No: 0270

DOE Coord: G.K.Ellis

Title: Method of Energy Recovery for Wastewater Treatment

Description: A process and apparatus to recover available hydraulic energy for wastewater aeration by using a specially designed hydraulic gas compressor.

Inventor: Shih-Chih Chang  
State : WA

Contact:  
Shih-Chih Chang  
2339 Davison Avenue  
Richland WA 99352  
509-582-2664

Status: Complete

Status Date: 04/05/85

OERI No.: 009767

Patent Status : Disclosure Document Program  
Development Stage : Engineering Design  
Technical Category: Industrial Processes

Recv by NIST : 10/13/83

Recom. by NIST : 09/07/84

Award Date : 04/05/85 Award Amount: \$ 65,055 Grant No: FG01-85CE15210

Contract Period: 04/05/85 - 09/23/88

Summary: A grant was awarded to optimize the variables in a bench-scale test set-up. The inventor has prepared and instrumented this test set-up. He has conducted tests to determine optimum process variables.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0271 DOE Coord: G.K.Ellis

Title: Hydrogen Storage System

Description: A new geometric design hydrogen storage system for rapid heat cycling, using metal hydride systems in finned tubes.

Inventor: William B Retallick  
State : PA

Contact:  
William B Retallick  
1432 Johnny's Way  
West Chester PA 19380  
215-399-1371

Status: Complete Status Date: 07/15/86 OERI No.: 009734

Patent Status : Not Applied For  
Development Stage : Concept Development  
Technical Category: Miscellaneous

Recv by NIST : 10/04/83  
Recom. by NIST : 09/26/84  
Award Date : 06/21/85 Award Amount: \$ 50,338 Grant No: FG01-85CE15230  
Contract Period: 06/21/85 - 12/20/85

Summary: A grant was awarded to build and test a prototype storage system. Results were encouraging, prompting new research initiative. EPRI is presently actively sponsoring the technology, and seeks to transfer it to industry. Inventor has recently obtained DOE/SBIR Phase I support as a spinoff of this invention.

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DOE No: 0272 DOE Coord: P.M.Hayes

Title: V-Plus System

Description: A method to cool lubricating oil in a positive displacement rotary screw compressor. A variable speed pump injects liquid refrigerant into the compressor discharge line.

Inventor: Robert M Roeglin  
State : WI

Contact:  
Robert M Roeglin  
2217 South First Street  
Milwaukee WI 53207  
414-744-0111

Status: Complete Status Date: 12/31/88 OERI No.: 009730

Patent Status : Patent # - 4275570  
Development Stage : Production & Marketing  
Technical Category: Buildings, Structures & Components

Recv by NIST : 09/14/83  
Recom. by NIST : 09/27/84  
Award Date : 02/24/87 Award Amount: \$149,986 Grant No: FG01-87CE15245  
Contract Period: 02/24/87 - 12/31/88

Summary: Grants were awarded to: 1) to test the lubricant cooling system at the Herrick Laboratory at Purdue University and 2) to concurrently test DOE #284 Atomized Oil-Injected Rotary Screw Compressors. Test results were inconclusive due to the low oil flow rate used. The V-Plus System is commercially available from Viltex Manufacturing Corporation.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0273 DOE Coord: P.M.Hayes

Title: Open Cycle Latent Heat Engine

Description: A novel engine that uses relatively low temperature water as a heat source.

Inventor: Julius Czaja  
State : NY

Contact:  
Julius Czaja

Status: No DOE Support Status Date: 09/13/85 OERI No.: 009866

Patent Status : Patent # - 4106294  
Development Stage : Concept Development  
Technical Category: Combustion Engines & Components

Recv by NIST : 12/07/83  
Recom. by NIST : 09/27/84

Summary: DOE had two meetings and several telephone conversations with the inventor. He cannot decide what course of action to follow. No work proposal has been submitted by the inventor.

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DOE No: 0274 DOE Coord: T.M.Levinson

Title: Flexible Lighting - Fluorescent Lighting Operating at Radio Frequency

Description: A lighting system consisting of electrodeless gas- containing capsules, strung in a clear plastic tubular jacket. The capsules are excited by standing waves produced by a radio frequency generator.

Inventor: Nathan E Passman  
State : CO

Contact:  
Nathan E Passman  
Illuminating Technology Corp  
2516 Forty-Ninth Street  
Unit Six  
Boulder CO 80301  
303-440-4486

Status: Complete Status Date: 05/28/87 OERI No.: 007911

Patent Status : Patent # - 3157823 and others  
Development Stage : Production & Marketing  
Technical Category: Miscellaneous

Recv by NIST : 12/31/80  
Recom. by NIST : 09/28/84  
Award Date : 09/30/85 Award Amount: \$ 79,590 Grant No: FG01-85CE15244  
Contract Period: 09/30/85 - 09/29/86

Summary: A one-year grant was awarded to design, build, and demonstrate the unique lighting system. Bridge structures and coal mine passageways will be the first two applications. An unsatisfactory report was received on May 28th, 1987.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0275 DOE Coord: J.Aellen

Title: Low Head - High Volume Pump

Description: A low-head, high volume double-acting piston pump for use in wind-driven water pumping stations.

Inventor: Don E Avery  
State : HI

Contact:  
Don E Avery  
45-437 Akimala  
Kaneohe HI 96744  
808-247-1909

Status: Complete Status Date: 06/03/87 OERI No.: 010115

Patent Status : Disclosure Document Program  
Development Stage : Prototype Test  
Technical Category: Miscellaneous

Recv by NIST : 04/23/84  
Recom. by NIST : 10/15/84  
Award Date : 06/04/86 Award Amount: \$ 56,325 Grant No: FG01-86CE15278  
Contract Period: 06/04/86 - 06/03/87

Summary: A one-year, \$56,325 grant was issued to design and demonstrate a low-head, high-volume pump. The County of Maui in Hawaii is cost-sharing. See recommendation #301 for related work. First season test proved concept. Winter 1986, tested 2nd generation product. Present throughput rate uneconomical in urban test. Device installed and working successfully on U. S. Fish and Wildlife bait pond in Hawaii. Grant work not completed. No final report available.

\*\*\*\*\*

DOE No: 0276 DOE Coord: J.Aellen

Title: Gas Concentration Cells as Converters of Heat into Electrical Energy

Description: A system for using gas concentration cells to convert waste heat directly into electricity through heat driven electrochemical reactions.

Inventor: Robert E Salomon  
State : PA

Contact:  
Robert E Salomon  
Chemistry Department  
Temple University  
Philadelphia PA 19122  
215-787-7125

Status: Complete Status Date: 09/30/87 OERI No.: 009713

Patent Status : Not Applied For  
Development Stage : Concept Development  
Technical Category: Fossil Fuels

Recv by NIST : 09/27/83  
Recom. by NIST : 10/25/84  
Award Date : 06/01/85 Award Amount: \$ 79,957 Grant No: FG01-85CE15218  
Contract Period: 06/01/85 - 09/30/87

Summary: A grant of \$79,957 was awarded on June 1st, 1985, to Temple University for building and testing a prototype model.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0277

DOE Coord: J.Aellen

Title: Electronic Conveyor Control Apparatus

Description: Electronic conveyor control, U.S. Patent #4,372,439 dated February 8, 1983, describes an automatic start/stop system for conveyor belts. Tests in three post offices over two 30 day periods (with and without the control) show a 50% reduction in energy used to drive the belts. No proposal submitted.

Inventor: Guy C Dempsey  
State : VA

Contact:  
Smart Technologies, Inc

Status: No DOE Support

Status Date: 09/30/90

OERI No.: 010221

Patent Status : Patent # - 4372439  
Development Stage : Limited Production/Marketing  
Technical Category: Industrial Processes

Recv by NIST : 06/08/84  
Recom. by NIST : 11/23/84

Summary: No proposal received.

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DOE No: 0278

DOE Coord: P.M.Hayes

Title: Complete System for Large Solar Water Heating and Storage

Description: An integrated system of solar collection and thermal storage for service water heating. It is a large- scale water heating system utilizing a heat pipe arrangement to extract thermal energy from an air- based solar collector.

Inventor: James M Stewart  
State : SC

Contact:  
James M Stewart  
115 Sylvan Way  
Greenville SC 29605  
803-242-9492

Status: Complete

Status Date: 08/07/87

OERI No.: 009238

Patent Status : Patent # - 4340033 and others  
Development Stage : Production Engineering  
Technical Category: Direct Solar

Recv by NIST : 11/23/82  
Recom. by NIST : 11/29/84  
Award Date : 06/27/85 Award Amount: \$ 71,581 Grant No: FG01-85CE15223  
Contract Period: 06/27/85 - 06/26/87

Summary: A grant of \$71,581 was awarded on June 27th, 1985, to build and test a prototype solar water heating system. Grant objectives were successfully completed. Technology featured in the NASA Spinoff 88 publication.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0279 DOE Coord: P.M.Hayes

Title: Method and Means for Preventing Frost Damage to Crops

Description: A mobile machine for preventing frost damage to crops by taking in warmer air from above crop level, heating the air slightly with a burner, and blowing the air horizontally through the crops at low level.

Inventor: Douglas R Reich  
State : FL

Contact:  
Douglas R Reich  
4563 Springview Circle  
Port Labelle FL 33935  
813-675-6205

Status: Complete Status Date: 08/07/87 OERI No.: 009638

Patent Status : Patent # -  
Development Stage : Working Model  
Technical Category: Industrial Processes

Recv by NIST : 01/29/83  
Recom. by NIST : 11/29/84  
Award Date : 08/26/85 Award Amount: \$ 74,280 Grant No: FG01-85CE15231  
Contract Period: 08/26/85 - 08/07/87

Summary: A grant of \$74,280 was awarded on August 26th, 1985, to fabricate, test and evaluate a new prototype. Field tests were conducted in conjunction with the University of Florida. The inventor leased a 7800 square foot production facility and has had sales in excess of \$3 million.

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DOE No: 0280 DOE Coord: J.Aellen

Title: Down Hole and Above Ground Resistance Heating for Paraffin Elimination

Description: A method for removing paraffin from down-hole oil well tubing by use of resistance heating induced in the tubing to heat and melt the paraffin.

Inventor: Andrew W Marr, Junior  
State : OK

Contact:  
Andrew W Marr, Junior  
P O Box #1464  
Ardmore OK 73401  
405-657-4202

Status: Complete Status Date: 09/22/86 OERI No.: 009509

Patent Status : Patent # - 4303128 and others  
Development Stage : Prototype Test  
Technical Category: Fossil Fuels

Recv by NIST : 04/19/83  
Recom. by NIST : 11/30/84  
Award Date : 08/28/85 Award Amount: \$ 58,286 Grant No: FG01-85CE15220  
Contract Period: 08/28/85 - 09/22/86

Summary: A grant of \$58,286 was awarded on August 28, 1985.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0281 DOE Coord: J.Aellen

Title: Sun Synchronous Solar Powered Refrigerator

Description: Photovoltaic powered refrigerator. Key features are durability, good insulation, efficient vapor/compression cycle, thermal storage, low cost, and sun synchronous operation without the use of batteries.

Inventor: Arthur D Sams  
State : CA

Contact:  
Arthur D Sams  
Polar Products  
2908 Oregon Court, I-11  
Torrance CA 90503  
213-320-3514

Status: Complete Status Date: 11/12/86 OERI No.: 010256

Patent Status : Not Applied For  
Development Stage : Prototype Development  
Technical Category: Buildings, Structures & Components

Recv by NIST : 07/02/84  
Recom. by NIST : 12/18/84  
Award Date : 08/12/85 Award Amount: \$ 69,415 Grant No: FG01-85CE15219  
Contract Period: 08/12/85 - 12/11/86

Summary: A grant of \$69,415 was awarded on August 12th, 1985, to build and test a prototype. Recipient contributed \$24,960 in addition to the grant.

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DOE No: 0282 DOE Coord: J.Aellen

Title: Insulated Siding

Description: An insulated siding for use on houses. Both vinyl and aluminum siding are fabricated with urethane foam averaging 1/2" thick and lined with aluminum foil backing.

Inventor: Eugene Tippmann  
State : IN

Contact:  
Robert J Koester  
Ball State University  
Ctr for Energy Res & Ed Svcs  
Muncie IN 47306  
317-285-1135

Status: Complete Status Date: 09/30/86 OERI No.: 010002

Patent Status : Patent # -  
Development Stage : Prototype Development  
Technical Category: Buildings, Structures & Components

Recv by NIST : 02/28/84  
Recom. by NIST : 12/18/84  
Award Date : 08/29/85 Award Amount: \$ 57,798 Grant No: FG01-85CE15240  
Contract Period: 08/29/85 - 09/30/86

Summary: A grant of \$57,798 was awarded on August 29th, 1985, to Ball State University to build and test prototype insulated sidings.

DOE No: 0283 DOE Coord: P.M.Hayes

Title: Aluminum Roofing Chips

Description: A reflective coating for application to built-up roofing. Aluminum chips are spray-applied to surfaces with good adhesion.

Inventor: Tom Atterbury  
State : OH

Contact:  
Donald Cullen  
Transmet Corporation  
4290 Perimeter Drive  
Columbus OH 43228  
614-276-5522

Status: Complete Status Date: 08/07/87 OERI No.: 010182

Patent Status : Patent # -  
Development Stage : Working Model  
Technical Category: Buildings, Structures & Components

Recv by NIST : 05/17/84  
Recom. by NIST : 12/18/84  
Award Date : 06/27/85 Award Amount: \$ 78,878 Grant No: FG01-85CE15232  
Contract Period: 06/27/85 - 02/01/87

Summary: A grant of \$78,878 was awarded on June 27th, 1985, to optimize the size, shape and composition of the aluminum roofing chip system. Tests showed 30-40% energy saving in summer due to the high reflectivity of the Al chips and 10% savings in winter due to low emissivity. The product is gaining acceptance in the market. The company expects several million dollars in sales in 1990.

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DOE No: 0284 DOE Coord: P.M.Hayes

Title: Atomized Oil-Injected Rotary Screw Compressors

Description: An atomized oil-injection system to improve the power and volumetric efficiencies of the rotary compressors.

Inventor: Anthony N Fresco  
State : NY

Contact:  
Anthony N Fresco  
Post Office Box #734  
Upton NY 11973  
516-282-7214

Status: Complete Status Date: 12/31/88 OERI No.: 009662

Patent Status : Not Applied For  
Development Stage : Concept Definition  
Technical Category: Buildings, Structures & Components

Recv by NIST : 08/22/83  
Recom. by NIST : 01/24/85  
Award Date : 02/24/87 Award Amount: \$149,986 Grant No: FG01-87CE15245  
Contract Period: 02/24/87 - 12/31/88

Summary: A grant of \$149,986 was awarded on February 24th, 1987, for two purposes: (1) to test the atomized oil injection concept for improved efficiency at Purdue University's Herrick Laboratory and (2) to test concurrently ERIP #272, the V-Plus System. The oil injection system was found to improve the volumetric efficiency. Inventor seeking independent financial backing to prepare for licensing negotiation with manufacturers.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0285 DOE Coord: T.M.Levinson

Title: Novel Fluid Ring (F/R) Seal Systems for Railroad Axle Bearing Systems

Description: A lubricant seal for railroad car axle bearings, the seal having no direct frictional contact between rotating and non-rotating parts and depending on dynamic effects for sealing.

Inventor: Hermann Ernst  
State : CT

Contact:  
Hermann Ernst  
Ernst Mechanical Devices  
20 Crowley Drive  
Old Saybrook CT 06475  
203-722-5477

Status: Award Status Date: 09/30/91 OERI No.: 010167

Patent Status : Patent # -  
Development Stage : Laboratory Test  
Technical Category: Transportation Systems, Vehicles & Components

Recv by NIST : 05/10/84  
Recom. by NIST : 01/25/85  
Award Date : 06/03/87 Award Amount: \$ 72,000 Grant No: FG01-87CE15334  
Contract Period: 06/03/87 - 06/01/90

Summary: A \$72,000 grant was awarded on June 3, 1987, to design a fluid-ring seal and test it in actual operation on a Burlington Northern railcar. testing was successful. Discussions regarding licensing are still underway with an American manufacturer of railroad wheel bearings and seals. The inventor applied for a patent for a simplified version of his prototype design that also prevents damage to railroad axles. He has considered applying the design of the seal system to over-the-road trucks and stationary machinery.

\*\*\*\*\*

DOE No: 0286 DOE Coord: G.K.Ellis

Title: Use of Pulse-Jet for Atomization of Coal/Water Mixture

Description: Propane or a fuel gas is burned in a pulse-jet. The pulse-jet exhaust is used aerodynamically to atomize a stream of a coal-water mixture injected into a large steam boiler combustor.

Inventor: Momtaz N Mansour  
State : MD

Contact:  
Momtaz N Mansour

Status: No DOE Support Status Date: 12/23/91 OERI No.: 010313

Patent Status : Not Applied For  
Development Stage : Concept Development  
Technical Category: Buildings, Structures & Components

Recv by NIST : 08/02/84  
Recom. by NIST : 01/25/85

Summary: In lieu of an ERIP grant, inventor received contract from Pittsburgh energy Technology Center, A DOE Laboratory, to support the subject technology.

DOE No: 0287

DOE Coord: J.Aellen

Title: Automatic Variable Pitch Marine Propeller

Description: A variable geometry marine propeller having the blades pivoted and balanced so as to automatically adjust propeller pitch, diameter, and basic area ratio in response to shaft speed and hydrodynamic load, thereby enabling the driving engine to function at optimum RPM and fuel efficiency over a broad range of hull speeds and loadings.

Inventor: Don J Marshall  
State : MD

Contact:  
Don J Marshall  
1087 Rodgers Road  
P O Box #159  
Churchton MD 20733  
301-867-2135

Status: Complete

Status Date: 12/15/87

OERI No.: 010259

Patent Status : Patent # - 4297079 and others

Development Stage : Prototype Test

Technical Category: Transportation Systems, Vehicles & Components

Recv by NIST : 06/26/84

Recom. by NIST : 01/25/85

Award Date : 09/06/85 Award Amount: \$ 41,593 Grant No: FG01-85CE15243

Contract Period: 09/06/85 - 12/15/87

Summary: A grant of \$41,593 was awarded on September 6, 1985, to build and test the proposed propeller. The test took place at Mississippi State University in cooperation with Sea Grant Advisory Service.

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DOE No: 0288

DOE Coord: G.K.Ellis

Title: Dickinson Pure Air Combustion (DIPAC) and Modified DIPAC (MODIPAC)

Description: A method of burning coal or coal/water/mixture at high pressure without resultant air pollution.

Inventor: Norman L Dickinson  
State : CA

Contact:  
Norman L Dickinson

Status: No DOE Support

Status Date: 08/06/87

OERI No.: 010307

Patent Status : Patent # - 4380960 and others

Development Stage : Engineering Design

Technical Category: Buildings, Structures & Components

Recv by NIST : 07/23/84

Recom. by NIST : 01/30/85

Summary: The inventor attended Commercialization Planning Workshop. Unable to establish definitive marketing need.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0289 DOE Coord: P.M.Hayes

Title: An Earthquake Barrier

Description: A concept to absorb the energy of an earthquake with bilinear force-deflection devices at the foundation of a building, thereby providing positive protection against inelastic distortions that cause building damage. This concept is claimed to avoid damage to the buildings during an earthquake and save human life.

Inventor: Marc S Caspe  
State : CA

Contact:  
Marc S Caspe  
1640 Oakwood Drive  
San Mateo CA 94403  
415-573-8888

Status: Complete Status Date: 01/09/87 OERI No.: 010311

Patent Status : Patent # - 3638377  
Development Stage : Engineering Design  
Technical Category: Buildings, Structures & Components

Recv by NIST : 07/26/84  
Recom. by NIST : 02/28/85  
Award Date : 01/10/86 Award Amount: \$ 68,749 Grant No: FG01-86CE15250  
Contract Period: 01/10/86 - 01/09/87

Summary: A grant was awarded to perform a conceptual study of the earthquake barrier's configuration, preliminary design, construction schedule and estimate of construction costs for four retrofit projects. An additional \$31,745 was awarded on July 28, 1986, to conduct shake table tests on the technology. Japanese architectural and construction firms have taken the lead in developing this type of technology.  
\*\*\*\*\*

DOE No: 0290 DOE Coord: J.Aellen

Title: Low Energy Ice Making Apparatus

Description: In this ice-making apparatus, ice is progressively formed on evaporator plates and harvested by a secondary condenser grid heated by the warm liquid refrigerant discharged by the primary water cooler condenser.

Inventor: Jerry Aleksandrow  
State : IL

Contact:  
Greg Ross  
Universal Ice Machine Mfg  
900 Jorie Boulevard  
Suite Seventy-Two  
Oakbrook IL 60521  
312-990-1111

Status: Complete Status Date: 05/20/87 OERI No.: 009807

Patent Status : Patent # - 4357807  
Development Stage : Limited Production/Marketing  
Technical Category: Miscellaneous

Recv by NIST : 11/03/83  
Recom. by NIST : 02/28/85  
Award Date : 05/21/86 Award Amount: \$ 62,500 Grant No: FG01-86CE15258  
Contract Period: 05/21/86 - 05/20/87

Summary: A grant was awarded to compare efficiency and safety with comparable machines. The testing program was not started. No final report submitted.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0291 DOE Coord: G.K.Ellis

Title: Selective Zone Isolation for HVAC System

Description: A method for controlling air flow from a central HVAC system in a programmed way so that only selected zones within a building receive air flow during specified time periods

Inventor: Jerry Tartaglino  
State : TX

Contact:  
Jerry Tartaglino  
4911 West Hanover  
Dallas TX 75209  
214-357-2665

Status: Complete Status Date: 10/08/88 OERI No.: 010331

Patent Status : Patent Applied For  
Development Stage : Working Model  
Technical Category: Buildings, Structures & Components

Recv by NIST : 08/02/84  
Recom. by NIST : 02/28/85  
Award Date : 04/15/86 Award Amount: \$ 90,769 Grant No: FG01-86CE15261  
Contract Period: 04/15/86 - 10/08/88

Summary: An award of \$45,384 was granted on April 15th, 1986, to build and demonstrate a prototype. A Phase II grant was awarded on April 9, 1987, for \$45,385 to build an advanced prototype. The prototype was completed and tested satisfactorily. The inventor is now actively marketing the invention and has it in production.

\*\*\*\*\*

DOE No: 0292 DOE Coord: J.Aellen

Title: Roof Construction Having Membrane and Photo Cells

Description: A building roof construction that also serves as a substrate, electrical interconnection, and protective covering for an array of flexible voltaic elements intended to generate electrical power for use in the building or elsewhere.

Inventor: Thomas F Francovitch  
State : MD

Contact:  
Thomas F Francovitch  
216 Circle Road  
Pasadena MD 21122  
301-437-3727

Status: Complete Status Date: 08/25/86 OERI No.: 010297

Patent Status : Patent Applied For  
Development Stage : Laboratory Test  
Technical Category: Direct Solar

Recv by NIST : 07/19/84  
Recom. by NIST : 02/28/85  
Award Date : 08/26/85 Award Amount: \$ 40,130 Grant No: FG01-85CE15239  
Contract Period: 08/26/85 - 08/25/86

Summary: A grant of \$40,130 was awarded on August 26th, 1985, to perform laboratory tests on the roof membrane and photocells.

DOE No: 0293 DOE Coord: J.Aellen

Title: "Therm-A-Valve" - Insulated Valve Coverings

Description: A solar powered system to keep critical flow control valves from freezing on gas wells during cold weather.

Inventor: Randell D Ball  
State : OK

Contact:  
PFI, Inc  
128 Northwest 67th Street  
Oklahoma City OK 73116  
405-354-4584

Status: Complete Status Date: 03/31/90 OERI No.: 010130

Patent Status : Patent Applied For  
Development Stage : Limited Production/Marketing  
Technical Category: Fossil Fuels

Recv by NIST : 04/24/84  
Recom. by NIST : 03/29/85  
Award Date : 01/15/86 Award Amount: \$ 56,193 Grant No: FG01-86CE15254  
Contract Period: 01/15/86 - 03/31/90

Summary: A grant for \$56,193 was awarded on January 15th, 1986, to build and test prototype valve covers, first in the laboratory and then in the field, under actual conditions. No-cost grant extension for 1 year expired January 31, 1990. No final report.

\*\*\*\*\*

DOE No: 0294 DOE Coord: G.K.Ellis

Title: Highway Power Patcher

Description: A portable self-propelled pavement patching machine which blows debris from a distressed area of pavement, mixes and applies an unheated crushed rock and asphalt patching material, and compacts the patch by means of a roller.

Inventor: Carl L Sterner  
State : CA

Contact:  
Carl L Sterner  
Route Four, Box #372  
Bakersfield CA 93309  
805-589-3355

Status: Complete Status Date: 08/15/86 OERI No.: 010077

Patent Status : Patent Applied For  
Development Stage : Prototype Test  
Technical Category: Industrial Processes

Recv by NIST : 03/20/84  
Recom. by NIST : 03/29/85  
Award Date : 08/15/85 Award Amount: \$ 60,031 Grant No: FG01-85CE15241  
Contract Period: 08/15/85 - 08/15/86

Summary: A grant of \$60,031 was awarded on August 15, 1985, to build and test a self-propelled highway pavement patching machine. Mr. Sterner has received numerous inquiries about his machine from all over the U.S. and seeks to license the technology.

DOE No: 0295

DOE Coord: J.Aellen

Title: Improved Method of Electroplating Aluminum for Corrosion Resistance

Description: A method for electroplating ferrous metals with aluminum for improved corrosion resistance.

Inventor: J Paul Pemsler  
State : MA

Contact:  
J Paul Pemsler  
Castle Technology Corporation  
Fifty-Two Dragon Court  
Woburn MA 01801  
617-933-5634

Status: Complete

Status Date: 02/27/87

OERI No.: 010185

Patent Status : Disclosure Document Program  
Development Stage : Laboratory Test  
Technical Category: Industrial Processes

Recv by NIST : 05/21/84  
Recom. by NIST : 03/29/85  
Award Date : 08/28/85 Award Amount: \$ 69,000 Grant No: FG01-85CE15236  
Contract Period: 08/28/85 - 02/27/87

Summary: A grant of \$69,000 was awarded on August 28, 1985, to build and test a prototype.

\*\*\*\*\*

DOE No: 0296

DOE Coord: P.M.Hayes

Title: Shower Bath Economizer

Description: A heat exchanger installed at a shower-bath or tub drain which transfers heat from the drain water to the incoming cold water, thereby reducing the amount of energy required to heat the water.

Inventor: Raymond Hunter  
State : TN

Contact:  
Raymond Hunter  
Chattanooga TN 37404

Status: Complete

Status Date: 07/31/86

OERI No.: 009516

Patent Status : Patent # - 4372372  
Development Stage : Production Engineering  
Technical Category: Buildings, Structures & Components

Recv by NIST : 04/26/83  
Recom. by NIST : 03/29/85  
Award Date : 02/01/86 Award Amount: \$ 58,000 Grant No: FG01-86CE15251  
Contract Period: 02/01/86 - 07/31/86

Summary: A grant of \$58,000 was awarded on January 1st, 1986, for the final design and development of the shower bath economizer. Test results were not reported to DOE.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0297 DOE Coord: J.Aellen

Title: Series (Two-Wire) V-Controller

Description: An electronic light dimmer for fluorescent lamps, that will mount in a single two-wired switch box without the need for re-wiring or replacing conventional lamp ballasts with "dimming" ballasts.

Inventor: E M Talbott  
State : MD

Contact:  
Varigas Research, Inc  
P O Box #489  
1717 York Road  
Lutherville-Timonium MD 21093  
301-252-6230

Status: Complete Status Date: 10/01/88 OERI No.: 010261

Patent Status : Patent Applied For  
Development Stage : Concept Development  
Technical Category: Buildings, Structures & Components

Recv by NIST : 07/05/84  
Recom. by NIST : 03/29/85  
Award Date : 08/19/85 Award Amount: \$ 70,785 Grant No: FG01-85CE15233  
Contract Period: 08/19/85 - 10/01/88

Summary: A grant of \$51,180 was awarded on August 19th, 1985, to design and build a prototype. Tests will be conducted in phase II.

\*\*\*\*\*

DOE No: 0298 DOE Coord: J.Aellen

Title: Three Tenths Degree Kelvin Closed Cycle Refrigeration System

Description: Closed-cycle refrigeration system to provide cooling to 0.3 Kelvin. Does not consume helium or other liquid cryogens.

Inventor: David L Swartz  
State : AZ

Contact:  
David L Swartz  
Cryosystems, Inc.  
1802 West Grant, Suite #122  
Tucson AZ 85745  
602-882-4628

Status: Complete Status Date: 11/05/87 OERI No.: 010254

Patent Status : Not Applied For  
Development Stage : Concept Development  
Technical Category: Buildings, Structures & Components

Recv by NIST : 06/28/84  
Recom. by NIST : 04/19/85  
Award Date : 04/05/86 Award Amount: \$ 63,500 Grant No: FG01-85CE15248  
Contract Period: 04/05/86 - 11/05/87

Summary: A grant of \$63,500 was awarded on April 5th, 1986, to build and test a prototype.

DOE No: 0299

DOE Coord: G.K.Ellis

Title: Process for Using Cocurrent Contacting Distillation Column

Description: A new fractionator tray design which achieves higher distillation column output through high-velocity cocurrent vapor-liquid flow in the zones between the trays.

Inventor: William R Trutna  
State : TX

Contact:  
William R Trutna  
2213 Fenwood  
Pasadena TX 77502  
713-472-5098

Status: Complete

Status Date: 09/30/88

OERI No.: 009873

Patent Status : Patent # - 4361469  
Development Stage : Engineering Design  
Technical Category: Industrial Processes

Recv by NIST : 12/07/83  
Recom. by NIST : 04/19/85  
Award Date : 09/17/86 Award Amount: \$ 74,192 Grant No: FG01-86CE15296  
Contract Period: 09/17/86 - 09/30/88

Summary: A grant of \$74,192 was awarded on September 17, 1986, to build and demonstrate a workable prototype. Tests were completed satisfactorily at the University of Texas' Separation Center, showing a 30% improvement in separations efficiency. The inventor seeks to license the technology.

\*\*\*\*\*

DOE No: 0300

DOE Coord: G.K.Ellis

Title: Casing Stabbing Apparatus

Description: A retrofittable hardware design for the rapid alignment of well casing sections during rig operations to prevent thread damage due to misalignment and cross threading.

Inventor: James McArthur  
State : OK

Contact:  
James McArthur  
Box Fifty  
Tishomingo OK 73460  
405-371-9223

Status: Complete

Status Date: 07/31/87

OERI No.: 010194

Patent Status : Patent # - 4440220  
Development Stage : Limited Production/Marketing  
Technical Category: Fossil Fuels

Recv by NIST : 05/25/84  
Recom. by NIST : 04/30/85  
Award Date : 07/18/86 Award Amount: \$ 64,337 Grant No: FG01-86CE15276  
Contract Period: 07/18/86 - 07/31/87

Summary: A grant of \$64,337 was awarded on July 18, 1986, to design, build and test a prototype. The prototype was completed and successfully tested. Inventor has sold the invention to Okie-Yoke, Inc., P. O. Box 105, Lindsay, OK 73052 (405/756-2188), which markets the invention as "Okie-Yoke".

DOE No: 0301 DOE Coord: J.Aellen

Title: Pump Control System for Windmills

Description: A mechanism for automatically controlling the stroke of wind-driven water pumps so as to match pump operation to the available wind energy.

Inventor: Don E Avery  
State : HI

Contact:  
Don E Avery  
45-437 Akimala Street  
Kaneohe HI 96744  
808-247-1909

Status: Complete Status Date: 06/03/87 OERI No.: 010469

Patent Status : Patent # - 4392785  
Development Stage : Limited Production/Marketing  
Technical Category: Miscellaneous

Recv by NIST : 11/02/84  
Recom. by NIST : 04/30/85  
Award Date : 06/04/86 Award Amount: \$ 43,625 Grant No: FG01-86CE15279  
Contract Period: 06/04/86 - 06/03/87

Summary: A \$43,625 grant was issued to build, install and demonstrate a variable stroke pump control system for an EDA aquaculture project at Kealia Pond, Maa Laea, Maui, Hawaii. The County of Maui is cost-sharing. See invention #275 for related work. Also installed in U.S. Fish and Wildlife bait pond. Grant work never completed. No final report available.

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DOE No: 0302 DOE Coord: J.Aellen

Title: Carri-Cel Impact Breaker and Counterflow Impact Rock Breakers

Description: A vertical shaft impact rock breaker having a direct-drive vertical shaft motor and an impact rock breaker in which the thrown rock is directed back toward the impeller so that most rock breakage occurs during collisions of thrown and returning rock.

Inventor: John H Burk  
State : CA

Contact:  
Phil Tippet  
Carri-Cel, Inc  
P O Box #4552  
Cleveland TN 37311  
615-489-1187

Status: Complete Status Date: 09/28/88 OERI No.: 010539

Patent Status : Patent Applied For  
Development Stage : Prototype Test  
Technical Category: Industrial Processes

Recv by NIST : 12/13/84  
Recom. by NIST : 04/30/85  
Award Date : 09/29/86 Award Amount: \$ 75,000 Grant No: FG01-86CE15292  
Contract Period: 09/29/86 - 09/28/88

Summary: A grant of \$75,000 was awarded on September 29th, 1986, to build and test a prototype.

DOE No: 0303

DOE Coord: J.Aellen

Title: Battery Heating Device

Description: An automotive battery heating device which stores exhaust heat in a phase-change storage material and which includes the necessary heat exchangers and controls to transfer heat to the battery to facilitate cold weather starting.

Inventor: Nicholas Archer Sanders  
State : VT

Contact:  
Nicholas Archer Sanders  
Eleven Green Ridge Road  
Route One, Box #175  
Norwich VT 05015  
802-649-3869

Status: Complete

Status Date: 04/27/88

OERI No.: 010170

Patent Status : Patent # - 4258677

Development Stage : Prototype Test

Technical Category: Transportation Systems, Vehicles &amp; Components

Recv by NIST : 05/11/84

Recom. by NIST : 05/31/85

Award Date : 02/28/86 Award Amount: \$ 71,500 Grant No: FG0186CE15257

Contract Period: 02/28/86 - 04/27/88

Summary: A grant of \$71,500 was awarded on February 28th, 1986, to build and test a model.

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DOE No: 0304

DOE Coord: G.K.Ellis

Title: Exfoliated Graphite Fibers

Description: A new material, exfoliated graphite fibers, a novel form of composite fiber, and a method for producing them.

Inventor: Deborah D Chung  
State : PA

Contact:  
Deborah D Chung  
3812 Henley Drive  
Pittsburgh PA 15235  
412-578-2710

Status: Complete

Status Date: 05/03/88

OERI No.: 010315

Patent Status : Patent Applied For

Development Stage : Laboratory Test

Technical Category: Miscellaneous

Recv by NIST : 07/31/84

Recom. by NIST : 05/31/85

Award Date : 09/30/86 Award Amount: \$ 80,000 Grant No: FG01-86CE15282

Contract Period: 09/30/86 - 05/03/88

Summary: A grant awarded to fabricate and test the fiber composite material. The results showed a four-fold increase in loss factor compared to the plain fiber composite. It thus appears highly significant in various damping applications that are important in both military and civilian sector products. Spaulding Composites Company has licensed the technology and intends to market it widely. Use of such advanced composites, they estimate, in aircraft alone will more than quadruple in just three years.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0305

DOE Coord: J.Aellen

Title: Automatic Filter Network Protection, Failure Detection and Correction System and Method

Description: A flap valve to be used in fabric bag filter systems such as those used in coal-burning powerplants, which automatically shuts off the flow of gas and flyash through ruptured filter bags.

Inventor: Harold L Bowman  
State : AR

Contact:  
Wade Wright

Baltimore MD 21218  
301-773-0614

Status: Complete

Status Date: 10/31/87

OERI No.: 010257

Patent Status : Patent # - 4356007  
Development Stage : Production Engineering  
Technical Category: Industrial Processes

Recv by NIST : 06/29/84  
Recom. by NIST : 05/31/85  
Award Date : 05/01/86 Award Amount: \$ 72,072 Grant No: FG01-86CE15262  
Contract Period: 05/01/86 - 10/31/87

Summary: A grant of \$72,072 was awarded on May first, 1986, to build a model and to test efficiency. Testing program never completed because of legal problems. No final report has yet been received.

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DOE No: 0306

DOE Coord: T.M.Levinson

Title: An Efficiency Computer for Heated or Air Conditioned Buildings

Description: Microprocessor-based device continuously evaluates overall space-conditioning performance. Feedback is used to teach a new, useful concept of efficiency to building owners, occupants and maintenance personnel.

Inventor: John W Ackley, III  
State : CT

Contact:  
John W Ackley, III  
16 Church Street  
Stonington CT 06378  
203-535-2906

Status: Complete

Status Date: 04/19/90

OERI No.: 010045

Patent Status : Not Applied For  
Development Stage : Prototype Test  
Technical Category: Buildings, Structures & Components

Recv by NIST : 02/17/84  
Recom. by NIST : 06/28/85  
Award Date : 04/20/87 Award Amount: \$ 74,450 Grant No: FG01-87CE15318  
Contract Period: 04/20/87 - 10/19/90

Summary: A \$74,450 grant was awarded on April 20, 1987, to build and test a prototype device. Battelle Pacific Northwest Laboratory assisted the inventor by providing data on commercial buildings in the Pacific Northwest and analyzing these data.

DOE No: 0307

DOE Coord: T.M.Levinson

Title: Vortex Generators for Aft Regions of Aircraft Fuselages

Description: A method for using small vortex generators at the aft end of aircraft fuselages, (particularly those with rear loading doors) to energize the flow in that region, reduce flow separation, and reduce form drag.

Inventor: Andrew Wortman  
State : CA

Contact:  
Andrew Wortman  
406 Alta Avenue  
Santa Monica CA 90402  
310-394-7332

Status: Complete

Status Date: 09/30/87

OERI No.: 010454

Patent Status : Patent Applied For  
Development Stage : Concept Development  
Technical Category: Transportation Systems, Vehicles & Components

Recv by NIST : 10/23/84  
Recom. by NIST : 06/28/85  
Award Date : 06/27/86 Award Amount: \$ 69,307 Grant No: FG01-86CE15277  
Contract Period: 06/27/86 - 09/30/87

Summary: A grant was awarded to design and conduct wind-tunnel tests on fuselage models of transport aircraft, utilizing the inventor's vortex generators. Based on wind-tunnel tests, overall drag reductions are expected to be 1 percent for a 747 and 2 percent for a C-5. This translated into annual operating cost reductions of about \$130,000 for a Boeing 747. The inventor made presentations to CASA in Spain and Aerospace in France in order to interest these aircraft companies in his technology.

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DOE No: 0308

DOE Coord: J.Aellen

Title: Binary Azeotropic, Hot Gas, Fat Extraction Process

Description: A solvent extraction process for rendering animal wastes. Invention would use n-heptane to extract the fat and would be recycled. Solids recovered will be produced at lower temperatures than present processes.

Inventor: Jay Read  
State : IN

Contact:  
Jay Read  
Plymouth Fertilizer Co., Inc.  
12092 Plymouth-Goshen Trail  
Plymouth IN 46563  
219-936-2144

Status: Complete

Status Date: 10/28/89

OERI No.: 010201

Patent Status : Patent Applied For  
Development Stage : Engineering Design  
Technical Category: Industrial Processes

Recv by NIST : 03/30/84  
Recom. by NIST : 06/28/85  
Award Date : 04/19/86 Award Amount: \$ 65,000 Grant No: FG01-86CE15255  
Contract Period: 04/19/86 - 10/28/89

Summary: A grant was awarded to construct a demonstration plant to produce high-quality animal protein and fat from carrion. Technology tested, unsuccessful due to uncontrollable foaming.

DOE No: 0309 DOE Coord: P.M.Hayes

Title: Process of Smelting with Submerged Burner

Description: A submerged burner for melting and refining metals. The design produces submerged combustion process resulting in a uniform oxidizing or reducing atmosphere circulating through the molten zone.

Inventor: Robert N Rose  
State : CT

Contact:  
Robert C LeMay

Status: No DOE Support Status Date: 09/30/89 OERI No.: 010351

Patent Status : Patent # - 4203761  
Development Stage : Laboratory Test  
Technical Category: Industrial Processes

Recv by NIST : 08/10/84  
Recom. by NIST : 06/28/85

Summary: No request for assistance has been received.

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DOE No: 0310 DOE Coord: G.K.Ellis

Title: Portable Wastewater Flow Metering Device

Description: A portable venturi type flowmeter for measuring liquid flow in sewers under either full flow or partial flow conditions.

Inventor: Robert M Hunter  
State : MT

Contact:  
Robert M Hunter  
320 South Wilson Avenue  
Bozeman MT 59715  
406-586-3905

Status: Complete Status Date: 03/19/88 OERI No.: 010308

Patent Status : Patent Applied For  
Development Stage : Laboratory Test  
Technical Category: Industrial Processes

Recv by NIST : 07/27/84  
Recom. by NIST : 07/31/85  
Award Date : 09/19/86 Award Amount: \$ 77,515 Grant No: FG01-86CE15298  
Contract Period: 09/19/86 - 03/19/88

Summary: A grant of \$77,515 was awarded on September 19th, 1986, to build and demonstrate a workable prototype. The prototype was completed and successfully tested. Final report has been received showing some significant results. Inventor seeks to license the technology.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0311 DOE Coord: J.Aellen

Title: Auxiliary Truck Heater

Description: A diesel fuel-fired heater used to heat truck engines prior to starting and also used to heat truck cabs.

Inventor: Herbert D Easterly  
State : TN

Contact:  
Herbert D Easterly  
Route One, Box Sixty-Six  
Crossville TN 38555  
616-484-6665

Status: Complete Status Date: 10/28/91 OERI No.: 006675

Patent Status : Patent # - 4192457  
Development Stage : Concept Definition  
Technical Category: Transportation Systems, Vehicles & Components

Recv by NIST : 03/26/80  
Recom. by NIST : 07/31/85  
Award Date : 09/11/89 Award Amount: \$ 59,941 Grant No: FG01-89CE15348  
Contract Period: 09/11/89 - 09/10/91

Summary: Grant was awarded to the Tennessee Technical University to build and test a prototype model.

\*\*\*\*\*

DOE No: 0312 DOE Coord: P.M.Hayes

Title: The "Jones AWT", a Micro-Computer-Based Automatic Well Tester for Use of Producing Oil Wells

Description: An automatic well tester for in-line automatic measurement of oil, gas and water produced by an oil well.

Inventor: Ray L Jones  
State : CA

Contact:  
Ray L Jones  
c/o Pet Automation Syst Inc  
325 South Hale Avenue  
Fullerton CA 92631  
714-773-4040

Status: Complete Status Date: 08/31/87 OERI No.: 010368

Patent Status : Patent # - 3911256  
Development Stage : Engineering Design  
Technical Category: Fossil Fuels

Recv by NIST : 08/22/84  
Recom. by NIST : 08/09/85  
Award Date : 03/10/86 Award Amount: \$ 72,470 Grant No: FG01-86CE15252  
Contract Period: 03/10/86 - 08/31/87

Summary: A grant of \$72,470 was awarded on March 10, 1986, to field test the oil-well testing system to determine and optimize the system performance. Inventor seeking joint venture relationship to manufacture and market the technology.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0313

DOE Coord: P.M.Hayes

Title: Process Controller for Stripper Oil Well Pumping Units

Description: A programmable microprocessor control system that determines the optimum pumping speed of a beam oil well pump by comparing the wave form of current flow during each pumping cycle to a wave form stored in memory. Based on the results of the comparison, the controller either modifies the pumping speed or shuts the pump off for a given period of time. The device is intended for stripper wells.

Inventor: Frank J Madison II  
State : PA

Contact:  
Frank J Madison II  
608 Hill Street  
Reynoldsville PA 15851  
814-653-2155

Status: Complete

Status Date: 01/20/87

OERI No.: 010425

Patent Status : Not Applied For  
Development Stage : Concept Development  
Technical Category: Fossil Fuels

Recv by NIST : 10/02/84  
Recom. by NIST : 08/13/85  
Award Date : 01/21/86 Award Amount: \$ 85,000 Grant No: FG01-86CE15253  
Contract Period: 01/21/86 - 01/20/87

Summary: A grant was awarded to design, test and demonstrate a prototype of a process controller which maximizes production of beam-type pumping oil wells. Inventor test marketed the "OPC Model 100"; the product is improved and is available for purchase. A constant control device, "OPC Model 2000", will be available by the Summer of 1990.

\*\*\*\*\*

DOE No: 0314

DOE Coord: T.M.Levinson

Title: Rolling Filter Apparatus

Description: A long filter mat is drawn in a zig-zag path across an air flow path to give multiple filtration passages through the filter mat. The mat is continuously drawn from a large roll such that fresh filter surface is continuously fed through the filter chamber. The used mat is discarded.

Inventor: Max Klein  
State : MA

Contact:  
Max Klein  
64 Euclid Avenue  
Pittsfield MA 01201  
413-499-3351

Status: Complete

Status Date: 05/17/90

OERI No.: 010734

Patent Status : Patent # - 4394146  
Development Stage : Limited Production/Marketing  
Technical Category: Industrial Processes

Recv by NIST : 03/15/85  
Recom. by NIST : 08/30/85  
Award Date : 08/18/86 Award Amount: \$ 67,500 Grant No: FG01-86CE15286  
Contract Period: 08/18/86 - 05/17/90

Summary: A grant was awarded to design, manufacture and operate a prototype filter apparatus to be put into demonstration, service. The grantee contributed to the demonstration and special engineering activities. The filtration material was put in and monitored in shop classrooms in selected schools. Results to date are promising.

DOE No: 0315

DOE Coord: J.Aellen

Title: Method of Processing Biodegradable Organic Material

Description: A high-rate continuous biodegrading reactor using immobilized microbes for producing natural gas from a high-load waste system.

Inventor: Ralph A Messing  
State : NY

Contact:  
Ralph A Messing  
168 Scenic Drive, South  
Horseheads NY 14845  
607-739-7242

Status: Complete

Status Date: 12/31/87

OERI No.: 010446

Patent Status : Patent Applied For  
Development Stage : Engineering Design  
Technical Category: Other Natural Sources

Recv by NIST : 10/19/84  
Recom. by NIST : 08/30/85  
Award Date : 04/19/86 Award Amount: \$ 75,000 Grant No: FG01-86CE15265  
Contract Period: 04/19/86 - 12/31/87

Summary: A grant of \$75,000 was awarded on April 19th, 1986, to build a portable demonstrator to be installed at Laprino Foods to be operated at their expense. Operation only partially successful. Inventor died before report could be written.

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DOE No: 0316

DOE Coord: P.M.Hayes

Title: Thrust Impact Rock Splitter

Description: A rock-splitting device in which two or more splitting segments are positioned in a hole in the rock, and the segments are moved outward by a wedge driven by an impact force superimposed on a constant force.

Inventor: George B Clark  
State : MO

Contact:  
Terry Nixon  
Box #519  
Rolla MO 65401  
314-364-7747

Status: Complete

Status Date: 09/16/87

OERI No.: 010649

Patent Status : Patent # - 4072353  
Development Stage : Concept Development  
Technical Category: Industrial Processes

Recv by NIST : 02/28/85  
Recom. by NIST : 08/30/85  
Award Date : 06/17/86 Award Amount: \$ 81,891 Grant No: FG01-86CE15268  
Contract Period: 06/17/86 - 09/16/87

Summary: A grant of \$81,891 was awarded on June 17th, 1986, to design a commercial prototype of the thrust impact rock splitter. Considering licensing or joint/venture options to get technology into the marketplace.

DOE No: 0317

DOE Coord: J.Aellen

Title: Edge-Illuminated Multi-Junction (VMJ) Solar Cell

Description: An edge-illuminated vertical multi-junction photovoltaic cell to be operated with concentrators from about 200 to 1000 suns.

Inventor: Bernard L Sater  
State : OHContact:  
Bernard L Sater  
9007 Westlawn Boulevard  
Olmstead Falls OH 44138  
216-243-2018

Status: Complete

Status Date: 03/15/91

OERI No.: 004602

Patent Status : Patent Applied For  
Development Stage : Working Model  
Technical Category: Direct Solar

Recv by NIST : 10/25/78

Recom. by NIST : 08/30/85

Award Date : 09/16/87 Award Amount: \$ 80,000 Grant No: FG01-87CE15337

Contract Period: 09/16/87 - 03/15/91

Summary: A grant was awarded to develop, test, and demonstrate a pre-production prototype model of the Edge-Illuminated VMJ solar cell invention with a goal of 20 percent or greater efficiency at 500 sun's intensity. Perform theoretical analysis, conduct metallization investigation and evaluate surface coatings.

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DOE No: 0318

DOE Coord: J.Aellen

Title: Bi-Polar Electrode for Hall-Heroult Electrolysis

Description: A new design for a bi-polar electrode for Hall- Heroult electrolysis for aluminum production.

Inventor: Louis A Joo  
State : TNContact:  
Jim Gee  
Great Lakes Research Corp  
P O Box #1031  
Elizabethtown TN 37643  
615-543-3111

Status: Complete

Status Date: 11/30/87

OERI No.: 010523

Patent Status : Patent # - 4462889  
Development Stage : Concept Development  
Technical Category: Industrial Processes

Recv by NIST : 12/03/84

Recom. by NIST : 08/30/85

Award Date : 05/08/86 Award Amount: \$ 76,078 Grant No: FG01-86CE15259

Contract Period: 05/08/86 - 11/30/87

Summary: A grant of \$76,078 was awarded on May 8th, 1986, to build a model electrode and test its efficiency. Inventor seeking additional development funding.

DOE No: 0319

DOE Coord: J.Aellen

Title: Removal of Hydrogen Sulfide from a Gas Stream

Description: A non-reactive adsorption/regeneration process for removing hydrogen sulfide from a gas stream.

Inventor: Shao-E Tung  
State : MA

Contact:  
Shao-E Tung  
Ninety-One Blake Road  
Brookline MA 02146  
617-589-2823

Status: Complete

Status Date: 01/31/90

OERI No.: 010530

Patent Status : Patent Applied For  
Development Stage : Engineering Design  
Technical Category: Industrial Processes

Recv by NIST : 12/07/84  
Recom. by NIST : 09/23/85  
Award Date : 07/30/86 Award Amount: \$ 85,400 Grant No: FG01-86CE15271  
Contract Period: 07/30/86 - 01/31/90

Summary: A grant of \$85,400 was awarded on July 30th, 1986. Received additional support under Program Opportunity Notice from Pittsburgh Energy Technology Center.

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DOE No: 0320

DOE Coord: J.Aellen

Title: Coal Gasification with Carbon Dioxide and Lime Recycling

Description: A coal gasification process that uses air instead of oxygen to produce a nitrogen-free, 400 BTU per cubic foot gas by use of recycled carbon dioxide and lime.

Inventor: Shang-I Cheng  
State : NJ

Contact:  
Shang-I Cheng

Status: No DOE Support

Status Date: 09/30/90

OERI No.: 010638

Patent Status : Patent # - 4448588 and others  
Development Stage : Prototype Test  
Technical Category: Fossil Fuels

Recv by NIST : 02/25/85  
Recom. by NIST : 09/23/85

Summary: No DOE support.

DOE No: 0321

DOE Coord: G.K.Ellis

Title: Process for Recovery of Oil from Oil Shale Simultaneously Producing Hydrogen

Description: A shale oil recovery process that also gasifies coke in the spent shale to produce hydrogen and carbon dioxide in a water gas shift reaction.

Inventor: Philip H Gifford II  
State : CO

Contact:  
Philip H Gifford II

Status: No DOE Support

Status Date: 12/23/91

OERI No.: 010279

Patent Status : Patent # - 4001105 and others  
Development Stage : Laboratory Test  
Technical Category: Fossil Fuels

Recv by NIST : 07/18/84  
Recom. by NIST : 09/24/85

Summary: The inventor has been unable to submit a definitive statement of work that DOE can support.

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DOE No: 0322

DOE Coord: E.P.Levine

Title: Electrical Resistance Cooking Apparatus with Automatic Circuit Control

Description: A method of using high frequency energy to cook meat for fast food vendors. The key feature is the lack of need for a vent.

Inventor: Maurice W Lee, Junior  
State : OK

Contact:  
Maurice W Lee, Junior  
Post Box Twenty-Six  
Boley OK 74829  
918-667-3341

Status: Complete

Status Date: 02/17/87

OERI No.: 010139

Patent Status : Patent Applied For  
Development Stage : Limited Production/Marketing  
Technical Category: Miscellaneous

Recv by NIST : 04/30/84  
Recom. by NIST : 09/30/85  
Award Date : 02/17/87 Award Amount: \$ 75,000 Grant No: FG01-87CE15317  
Contract Period: 02/17/87 - 08/16/90

Summary: A grant was awarded to develop the second generation cooker with 50% reduction in cost/price.

DOE No: 0323 DOE Coord: G.K.Ellis

Title: Rolling Mill for Reduction of Moisture Content in Waste Material

Description: A mechanical device to remove some of the water from wood waste fuel. The previously pulverized wood is passed between two rollers, and water is pressed from the wood.

Inventor: David M Wilder  
State : OR

Contact:  
David M Wilder  
82061 Lost Valley Lane  
Dexter OR 97431  
503-937-3537

Status: Complete Status Date: 12/24/88 OERI No.: 010613

Patent Status : Patent # - 4436028  
Development Stage : Prototype Test  
Technical Category: Industrial Processes

Recv by NIST : 02/07/85  
Recom. by NIST : 09/30/85  
Award Date : 04/24/86 Award Amount: \$ 76,396 Grant No: FG01-86CE15280  
Contract Period: 04/24/86 - 12/24/88

Summary: A grant was awarded on April 24th, 1986, in the amount of \$76,396 to build and demonstrate a workable prototype. The prototype has been completed and was satisfactorily tested in participation with an interested company.

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DOE No: 0324 DOE Coord: J.Aellen

Title: Method and Composition for Enhancement of Mycorrhizal Development by Foliar Fertilization

Description: A method for increasing plant growth by means of a foliar fertilization process intended to increase the infection of plant roots by mycorrhizal fungi, thus increasing their uptake of water and nutrients from the soil.

Inventor: H. E. Garrett  
State : MO

Contact:  
H. E. Garrett  
University of Missouri. Columb  
Sch of Forestry, Fish & Wldlf  
I-30 Agriculture Building  
Columbia MO 65211  
314-882-3647

Status: Complete Status Date: 08/19/89 OERI No.: 010684

Patent Status : Not Applied For  
Development Stage : Concept Development  
Technical Category: Industrial Processes

Recv by NIST : 02/28/85  
Recom. by NIST : 09/30/85  
Award Date : 08/20/86 Award Amount: \$ 75,000 Grant No: FG01-86CE15270  
Contract Period: 08/20/86 - 08/19/89

Summary: A \$75,000 grant was awarded on August 20th, 1986, to perform laboratory tests and field demonstration.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0325

DOE Coord: P.M.Hayes

Title: Low Cost, Low Energy Machine and Method for Continuous Casting Non-Ferrous Strip and Composites

Description: A process for continuous casting of non-ferrous and composite materials into thin strips.

Inventor: Forrest M Palmer  
State : SC

Contact:  
Forrest M Palmer  
Thirty-One Towhee Road  
Hilton Head SC 29928  
803-681-8887

Status: Complete

Status Date: 01/31/88

OERI No.: 009934

Patent Status : Patent Applied For  
Development Stage : Laboratory Test  
Technical Category: Industrial Processes

Recv by NIST : 01/12/84  
Recom. by NIST : 09/30/85  
Award Date : 08/08/86 Award Amount: \$ 47,357 Grant No: FG01-86CE15285  
Contract Period: 08/08/86 - 01/31/88

Summary: A grant of \$47,357 was awarded on August 8, 1986, to test the feasibility and operating characteristics of Mr. Palmer's continuous casting method. Additional testing is necessary to demonstrate the technical feasibility of the process.

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DOE No: 0326

DOE Coord: G.K.Ellis

Title: A Mechanical Stemming Device for Use in Explosive Loaded Blast Holes

Description: A conical wedge used to improve confinement of an explosive charge to a drilled hole, increasing the rock fragmentation performance of the explosive.

Inventor: Paul N Worsey  
State : MO

Contact:  
F Terry Nixon  
Route Four, Box #519  
Rolla MO 65401  
314-364-7747

Status: Complete

Status Date: 03/21/88

OERI No.: 010667

Patent Status : Not Applied For  
Development Stage : Concept Development  
Technical Category: Miscellaneous

Recv by NIST : 02/28/85  
Recom. by NIST : 10/31/85  
Award Date : 09/22/86 Award Amount: \$ 78,251 Grant No: FG01-86CE15297  
Contract Period: 09/22/86 - 03/21/88

Summary: A grant of \$78,251 was awarded on September 22, 1986, to build and test a workable prototype. Tests were encouraging. Decision to be made whether to venture or license the technology.

DOE No: 0327 DOE Coord: G.K.Ellis

Title: Square Pattern Irrigation Sprinkler

Description: A sprinkler head that will uniformly distribute irrigation water over a square pattern.

Inventor: B F Rabitsch  
State : GA

Contact:  
B F Rabitsch  
Post Office Box #598  
Millen GA 30442  
912-982-5593

Status: Complete Status Date: 04/07/88 OERI No.: 010367

Patent Status : Patent # - 4277029  
Development Stage : Laboratory Test  
Technical Category: Industrial Processes

Recv by NIST : 08/22/84  
Recom. by NIST : 10/31/85  
Award Date : 06/09/86 Award Amount: \$ 87,426 Grant No: FG01-86CE15287  
Contract Period: 06/09/86 - 04/07/88

Summary: A grant for \$81,426 was awarded on June ninth, 1986, to build and demonstrate a workable prototype. The prototype was completed, and tests were successful.

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DOE No: 0328 DOE Coord: J.Aellen

Title: Multi-Directional Pre and Post-Heating Device for Thermal Flamecutting

Description: A local heating apparatus working in conjunction with gascutting to prevent hardening of carbon plate steels. In some grades toughness is also improved.

Inventor: Robert F Roussey, Junior  
State : PA

Contact:  
Robert F Roussey, Junior  
Three School Lane  
Downingtown PA 19335  
215-269-5535

Status: Complete Status Date: 09/22/88 OERI No.: 010339

Patent Status : Not Applied For  
Development Stage : Prototype Development  
Technical Category: Miscellaneous

Recv by NIST : 08/09/84  
Recom. by NIST : 10/31/85  
Award Date : 03/23/87 Award Amount: \$ 42,902 Grant No: FG01-87CE15323  
Contract Period: 03/23/87 - 09/22/88

Summary: A grant of \$42,902 was awarded on March 23rd, 1987, to prepare samples and have them tested at Lehigh University.

DOE No: 0329

DOE Coord: P.M.Hayes

Title: Modularized Pneumatic Tractor with Debris Liquifier

Description: A tractor mounted device to operate inside storage tanks to remove asphaltic and paraffinic deposits during cleaning operations.

Inventor: Albert Lindqvist  
State : VI

Contact:  
N F Bibby

Status: No DOE Support

Status Date: 08/07/87

OERI No.: 010570

Patent Status : Patent # - 4407035  
Development Stage : Limited Production/Marketing  
Technical Category: Industrial Processes

Recv by NIST : 01/11/85  
Recom. by NIST : 11/29/85

Summary: No support was requested by inventor or contact.

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DOE No: 0330

DOE Coord: J.Aellen

Title: Vacuum Heat Treating Furnace and Quench System with Drop Transfer

Description: A small vacuum heat treat furnace.

Inventor: Norbert E Stainbrook  
State : PA

Contact:  
Norbert E Stainbrook  
423 Sunnyside Avenue  
Meadville PA 16335  
814-336-3857

Status: Complete

Status Date: 07/10/89

OERI No.: 010691

Patent Status : Patent Applied For  
Development Stage : Working Model  
Technical Category: Industrial Processes

Recv by NIST : 03/06/85  
Recom. by NIST : 11/29/85  
Award Date : 07/11/86 Award Amount: \$ 69,987 Grant No: FG01-86CE15290  
Contract Period: 07/11/86 - 07/10/89

Summary: A grant of \$69,987 was awarded on July 11th, 1986, to build a furnace to test its capabilities.

DOE No: 0331 DOE Coord: E.P.Levine

Title: Cyclic Char Combustion for Engines, Boilers and Gasifiers

Description: An internal combustion engine capable of burning char fuel.

Inventor: Joseph C Firey  
State : WA

Contact:  
Joseph C Firey  
University of Washington  
Dept.of Mechanical Engineering  
Seattle WA 98195  
206-524-2671

Status: Complete

Status Date: 08/09/91

OERI No.: 010444

Patent Status : Patent # - 4412511 and others  
Development Stage : Concept Development  
Technical Category: Combustion Engines & Components

Recv by NIST : 10/16/84  
Recom. by NIST : 11/29/85  
Award Date : 02/10/87 Award Amount: \$ 83,611 Grant No: FG01-87CE15310  
Contract Period: 02/10/87 - 08/09/91

Summary: A grant was awarded to build, perform bench testing and determine the optimum parameters of performance. Grant effort completed.

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DOE No: 0332 DOE Coord: J.Aellen

Title: Volk Pistachio Huller

Description: A machine to hull pistachio nuts by means of dry abrasion process based on the action of a studded cylinder, which pushes unhulled nuts through a slotted, curved plate.

Inventor: Benjamin Volk  
State : CA

Contact:  
Benjamin Volk

Status: No DOE Support

Status Date: 09/30/88

OERI No.: 010738

Patent Status : Patent # - 4448115 and others  
Development Stage : Laboratory Test  
Technical Category: Industrial Processes

Recv by NIST : 03/19/85  
Recom. by NIST : 12/31/85

Summary: DOE declined to support this invention due to limited energy relationship.

DOE No: 0333

DOE Coord: J.Aellen

Title: Laser Based Machine for Die and Prototype Manufacturing

Description: A method for manufacturing dies and molds using automated laser cutting of thin metal sheets and bonding of the sheets into the required three-dimensional forms.

Inventor: Michael Feygin  
State : IL

Contact:  
Michael Feygin  
Hydronetics  
3832 North Ashland Avenue  
Chicago IL 60626  
312-764-8691

Status: Complete

Status Date: 08/09/88

OERI No.: 010745

Patent Status : Disclosure Document Program  
Development Stage : Laboratory Test  
Technical Category: Industrial Processes

Recv by NIST : 03/27/85  
Recom. by NIST : 12/31/85  
Award Date : 02/10/87 Award Amount: \$ 70,000 Grant No: FG01-87CE15316  
Contract Period: 02/10/87 - 08/09/88

Summary: A \$70,000 grant was awarded on February 10th, 1987, to build and test the technology. No final report has yet been received.

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DOE No: 0334

DOE Coord: E.P.Levine

Title: So-Luminaire Natural Daylighting Unit

Description: An active, sun-tracking mirror/skylight system that reflects natural light into the occupied space for illumination in lieu of electric lights. The reflecting mirror closes upon the skylight opening at night and during periods of high winds.

Inventor: Richard Lee Dominquez  
State : AZ

Contact:  
William Lindner  
So-Luminaire Corporation  
3000 East Chambers Road  
Phoenix AZ 85040  
602-993-1096

Status: Complete

Status Date: 09/20/90

OERI No.: 010728

Patent Status : Patent # - 4429952  
Development Stage : Limited Production/Marketing  
Technical Category: Direct Solar

Recv by NIST : 03/12/85  
Recom. by NIST : 12/31/85  
Award Date : 09/20/90 Award Amount: \$ 99,999 Grant No: FG01-90CE15375  
Contract Period: 09/20/90 - 09/19/92

Summary: A grant was awarded to fabricate, install, and test 77 so-Luminare daylighting units to empirically determine the degree of energy efficiency and cost- saving benefits. Demonstration test is being conducted at a Phoenix supermarket.

DOE No: 0335

DOE Coord: J.Aellen

Title: Robotic Bridge Observation and Information System

Description: A remotely controlled system utilizing observation and signal processing to inspect and record the condition of bridges and other structures.

Inventor: Robert A Maciejczak  
State : IL

Contact:  
Robert A Maciejczak

Status: No DOE Support

Status Date: 09/30/88

OERI No.: 010541

Patent Status : Patent Applied For  
Development Stage : Limited Production/Marketing  
Technical Category: Industrial Processes

Recv by NIST : 12/18/84  
Recom. by NIST : 01/23/86

Summary: Inventor's request for grant support disapproved due to limited energy relationship.

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DOE No: 0336

DOE Coord: J.Aellen

Title: A Carbonaceous Selective Absorber for Solar Thermal Energy Collection and Process for Its Formation

Description: A carbonaceous selective absorber for solar thermal energy collection and process for making same.

Inventor: John D Garrison  
State : CA

Contact:  
John D Garrison  
San Diego State University  
Department of Physics  
San Diego CA 92182  
619-265-6156

Status: Complete

Status Date: 12/31/88

OERI No.: 010716

Patent Status : Not Applied For  
Development Stage : Prototype Development  
Technical Category: Direct Solar

Recv by NIST : 03/05/85  
Recom. by NIST : 01/31/86  
Award Date : 07/31/86 Award Amount: \$ 70,000 Grant No: FG01-86CE15289  
Contract Period: 07/31/86 - 12/31/88

Summary: A \$70,000 grant was awarded for the design and fabrication of apparatus used in the construction of selectively coated solar panels and for the testing and evaluation of these unique coatings under severe environmental conditions.

DOE No: 0337

DOE Coord: A.R.Barnes

Title: An Air Operated Hydraulic Power Unit

Description: A pneumatic-hydraulic power unit for actuating automatic electric welding guns in high-production manufacturing.

Inventor: J Donald Snitgen  
State : MI

Contact:  
J Donald Snitgen  
18828 Hillcrest  
Birmingham MI 48009  
313-624-4066

Status: Complete

Status Date: 05/21/88

OERI No.: 010964

Patent Status : Patent # - 4455828 and others  
Development Stage : Limited Production/Marketing  
Technical Category: Industrial Processes

Recv by NIST : 07/01/85  
Recom. by NIST : 01/31/86  
Award Date : 08/22/86 Award Amount: \$ 59,916 Grant No: FG01-86CE15290  
Contract Period: 08/22/86 - 05/21/88

Summary: A \$59,916 grant was awarded on August 22nd, 1986, to construct four engineering prototypes - two constant-run type and two positive displacement type, and perform independent testing of units. Grant completed successfully. Units are being manufactured. Ford has purchased 200 units at a total cost of \$1.9 million. GM is testing for line delivery robotics applications.

\*\*\*\*\*

DOE No: 0338

DOE Coord: G.K.Ellis

Title: Downhole Pneumatic Turbine Motor for Geothermal Energy

Description: A downhole pneumatic turbine motor for geothermal well drilling.

Inventor: William C Lyons  
State : NM

Contact:  
William C Lyons  
P O Box #2457  
Santa Fe NM 87504  
505-982-2467

Status: Complete

Status Date: 08/06/87

OERI No.: 010889

Patent Status : Patent # - 4434862  
Development Stage : Engineering Design  
Technical Category: Other Natural Sources

Recv by NIST : 06/04/85  
Recom. by NIST : 02/03/86  
Award Date : 06/20/86 Award Amount: \$ 79,750 Grant No: FG01-86CE15285  
Contract Period: 06/20/86 - 08/06/87

Summary: An award of \$79,750 was made on June 20th, 1986, to build and demonstrate a workable prototype. The prototype was completed, successfully tested, and has been installed in commercial operation to provide drilling services for geothermal drilling companies. Subsequently, a six-inch motor will be developed for oil and gas wells.

DOE No: 0339 DOE Coord: P.M.Hayes

Title: Recycoil II

Description: A heat exchanger system for using some of the heat (energy) from a laundromat dryer to heat water for washers.

Inventor: John L Wendel  
State : FL

Contact:  
William R Schick  
c/o Alternate Energy Systems  
133 Startrail  
Fort Richey FL 33553  
813-862-9166

Status: Complete Status Date: 08/28/89 OERI No.: 004869

Patent Status : Patent # - 4187701 and others  
Development Stage : Limited Production/Marketing  
Technical Category: Buildings, Structures & Components

Recv by NIST : 02/22/79  
Recom. by NIST : 02/07/86  
Award Date : 08/28/89 Award Amount: \$ 4,888 Grant No: FG01-89CE15349  
Contract Period: 08/28/89 - 08/27/90

Summary: A grant of \$4,888 was awarded on August 28th, 1989, to allow the American Gas Association to test the inventor's heat exchange system.

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DOE No: 0340 DOE Coord: G.K.Ellis

Title: Separation of Adsorbed Components by Variable Temperature Desorption

Description: An Adsorption Based Method for Separating Multicomponent Liquid or Multicomponent Gas Systems

Inventor: Marshall Findley  
State : MO

Contact:  
Marshall Findley  
Department of Chemical Eng  
143 Schrenk Hall  
Rolla MO 65401  
314-341-4416

Status: Complete Status Date: 02/10/89 OERI No.: 010856

Patent Status : Not Applied For  
Development Stage : Engineering Design  
Technical Category: Industrial Processes

Recv by NIST : 05/23/85  
Recom. by NIST : 02/18/86  
Award Date : 02/11/87 Award Amount: \$ 77,791 Grant No: FG01-87CE15304  
Contract Period: 02/11/87 - 02/10/89

Summary: Grant awarded for \$77,791 on February eleventh, 1987, for development and testing of pilot-scale prototype. Testing results were promising. Inventor seeks licensing opportunity.

DOE No: 0341

DOE Coord: G.K.Ellis

Title: High Pressure Liquid Jets as a Tool for Disintegrating Organic and Non-Organic Materials

Description: A process for using high-pressure water jets for comminution of organic and inorganic materials.

Inventor: Marian Mazurkiewicz  
State : MO

Contact:  
F Terry Nixon  
Route Four, Box #519  
Rolla MO 65401  
314-364-7747

Status: Complete

Status Date: 09/14/87

OERI No.: 010661

Patent Status : Patent Applied For  
Development Stage : Concept Development  
Technical Category: Industrial Processes

Recv by NIST : 02/28/85  
Recom. by NIST : 02/21/86  
Award Date : 09/14/86 Award Amount: \$ 69,248 Grant No: FG01-86CE15299  
Contract Period: 09/14/86 - 09/14/87

Summary: A grant of \$69,248 was awarded on September 14th, 1986, to build and demonstrate a prototype. The prototype was completed and tested; the results showed no marked improvement over existing technology.

\*\*\*\*\*

DOE No: 0342

DOE Coord: J.Aellen

Title: Raw Fines Medium Coal Washing System

Description: A process to recover raw fines from refuse piles at coal mines.

Inventor: Gary L Drake  
State : KY

Contact:  
Gary L Drake  
3500 Fern Valley Road  
120 North Ocean Boulevard  
Louisville KY 40213  
502-964-0653

Status: Complete

Status Date: 09/01/88

OERI No.: 010783

Patent Status : Not Applied For  
Development Stage : Prototype Test  
Technical Category: Industrial Processes

Recv by NIST : 04/23/85  
Recom. by NIST : 02/24/86  
Award Date : 03/02/87 Award Amount: \$ 76,456 Grant No: FG01-87CE15293  
Contract Period: 03/02/87 - 09/01/88

Summary: A \$76,456 grant was awarded on March 2, 1987, to test the technology. No final report has yet been received. Testing program was never started.

DOE No: 0343 DOE Coord: T.M.Levinson

Title: Electronic Octane

Description: A system in which knock intensity in individual cylinders of an automobile engine is sensed and used as a feed-back parameter to control spark timing in individual cylinders.

Inventor: John A McDougal  
State : MI

Contact:  
John A McDougal

Status: No DOE Support Status Date: 01/01/93 OERI No.: 010899

Patent Status : Patent # - 4116173 and others  
Development Stage : Limited Production/Marketing  
Technical Category: Combustion Engines & Components

Recv by NIST : 06/07/85  
Recom. by NIST : 03/04/86

Summary: No DOE support requested. Inventor considering possible demonstration plans. License agreements were signed with Ford and Chrysler as a result of infringement litigation.

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DOE No: 0344 DOE Coord: G.K.Ellis

Title: Machine for Separating Concrete from Steel

Description: A machine for removing damaged Portland cement concrete roadway by inserting a wedge-shaped anvil under the pavement, hammering the pavement to break it into small pieces, removing it from the reinforcing rod, and conveying the resulting aggregate to trucks. The reinforcing rod is returned to the roadway to be utilized in the repaving operation.

Inventor: Deems M Pfaff  
State : MN

Contact:  
Deems M Pfaff  
430 First Avenue, North  
Suite #720  
Minneapolis MN 55401  
612-450-1152

Status: Complete Status Date: 01/19/88 OERI No.: 010394

Patent Status : Patent # - 4309126  
Development Stage : Engineering Design  
Technical Category: Industrial Processes

Recv by NIST : 09/11/84  
Recom. by NIST : 03/07/86  
Award Date : 01/20/87 Award Amount: \$ 69,956 Grant No: FG01=87CE15315  
Contract Period: 01/20/87 - 01/19/88

Summary: A grant of \$69,956 was awarded on January 20th, 1987, as part of a \$2.5 million project. Additional funding from other sources is being sought.

DOE No: 0345 DOE Coord: P.M.Hayes

Title: Tulleners Wave Piercer

Description: Design of a seacraft based on sound hydrodynamic and dynamic principles; possesses superior floating qualities with a significant reduction in required power for propulsion.

Inventor: Harry Werner Tulleners  
State : OH

Contact:  
Harry Werner Tulleners  
114 West Market Street  
Urbana OH 43078  
513-653-6756

Status: Complete Status Date: 09/30/89 OERI No.: 001370

Patent Status : Patent # - 3430595  
Development Stage : Concept Development  
Technical Category: Transportation Systems, Vehicles & Components

Recv by NIST : 10/08/76  
Recom. by NIST : 03/10/86  
Award Date : 08/07/87 Award Amount: \$ 70,898 Grant No: FG01-87CE15342  
Contract Period: 08/07/87 - 09/30/89

Summary: The Department of the Navy, David Taylor Ship Research and Development Center, conducted seakeeping tests on Mr. Tulleners catamaran-type boat as part of a \$70,898 inter-agency agreement with the Department of Energy. Mr. Tulleners is participating in the American Bureau of Shipping and the U.S. Coast Guard boat certification processes. In FY 1989, DOE provided an additional \$2,987 to the Department of the Navy for a cost overrun on the project.

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DOE No: 0346 DOE Coord: G.K.Ellis

Title: Ultra-Pure Water System for Hospitals

Description: An ozone generator based system for producing medical quality sterile water for intravenous and other applications.

Inventor: Eskil L Karlson  
State : PA

Contact:  
Eskil L Karlson  
2626 State Street  
Erie PA 16508  
814-455-7849

Status: Complete Status Date: 02/20/88 OERI No.: 011050

Patent Status : Disclosure Document Program  
Development Stage : Prototype Development  
Technical Category: Industrial Processes

Recv by NIST : 08/02/85  
Recom. by NIST : 03/14/86  
Award Date : 08/20/86 Award Amount: \$ 78,589 Grant No: FG01-86CE15294  
Contract Period: 08/20/86 - 02/20/88

Summary: A grant for \$78,589 was awarded on August 20th, 1986, to build and demonstrate a workable prototype. The prototype was completed and successfully tested, and the inventor is in active negotiation for licensing.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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DOE No: 0347

DOE Coord: J.Aellen

Title: Oxide Dispersion Strengthened Aluminum Alloys

Description: A process for manufacturing a series of 2XXX aluminum alloys having improved strength at temperatures above 350 degrees F.

Inventor: Ray Alexander  
State : UT

Contact:  
Ray Alexander  
410 Chipeta Way  
Suite #222  
Salt Lake City UT 84108  
801-582-8080

Status: Complete

Status Date: 08/18/88

OERI No.: 011108

Patent Status : Patent Applied For  
Development Stage : Concept Development  
Technical Category: Industrial Processes

Recv by NIST : 08/26/85  
Recom. by NIST : 03/17/86  
Award Date : 02/19/87 Award Amount: \$ 70,000 Grant No: FG01-87CE15300  
Contract Period: 02/19/87 - 08/18/88

Summary: A grant of \$70,000 was awarded on February 19, 1987, to prepare and test samples.

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DOE No: 0348

DOE Coord: G.K.Ellis

Title: Hydrogen Sulfide Removal for Natural Gas

Description: A process for removing heavy concentration (30% - 50%) of hydrogen sulfide from gas streams.

Inventor: Christiaan P van Dijk  
State : TX

Contact:  
Christiaan P van Dijk  
10722 Glenway  
Houston TX 77070  
713-469-1122

Status: Complete

Status Date: 05/01/88

OERI No.: 011171

Patent Status : Not Applied For  
Development Stage : Engineering Design  
Technical Category: Industrial Processes

Recv by NIST : 10/03/85  
Recom. by NIST : 04/04/86  
Award Date : 02/02/87 Award Amount: \$ 73,426 Grant No: FG01-87CE15314  
Contract Period: 02/02/87 - 05/01/88

Summary: A grant of \$73,426 was awarded on February second, 1987, to develop information adequate to build a pilot plant which was completed and successfully tested. Inventor negotiating for licensing.

DOE No: 0349 DOE Coord: P.M.Hayes

Title: Three Roll Tension Stand

Description: A high-shear rolling process for the rapid reduction of steel slabs to strip in a single pass.

Inventor: Howard S Orr  
State : PA

Contact:  
E K Jacob

Status: No DOE Support Status Date: 04/11/86 OERI No.: 010526

Patent Status : Patent # - 4291562  
Development Stage : Engineering Design  
Technical Category: Industrial Processes

Recv by NIST : 12/04/84  
Recom. by NIST : 04/09/86

Summary: No request for assistance has been received.

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DOE No: 0350 DOE Coord: G.K.Ellis

Title: Method and Apparatus for Testing Soil

Description: A testing device for determining the various properties of soil, in situ, for use in analysis of soil-structure interaction under seismic loadings.

Inventor: Wanda Henke  
State : MD

Contact:  
Wanda Henke  
2003 Vista Lane  
Lutherville MD 21293  
301-252-4474

Status: Complete Status Date: 05/22/88 OERI No.: 010462

Patent Status : Patent Applied For  
Development Stage : Concept Development  
Technical Category: Industrial Processes

Recv by NIST : 11/01/84  
Recom. by NIST : 04/09/86  
Award Date : 12/23/86 Award Amount: \$ 79,860 Grant No: FG01-87CE15305  
Contract Period: 12/23/86 - 05/22/88

Summary: A grant of \$79,860 was awarded on December 23rd, 1986, for developing final design of prototype system, as part of an NSF SBIR phase II project. The prototype was completed and successfully tested. Inventor is now progressing rapidly in final phases of testing in NSF's SBIR Phase II. Results are promising.



